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Final

Fiscal Year 2005
Site Management Plan
Marine Corps Base
Camp Lejeune, North Carolina
CLEAN III

Prepared For



Atlantic Division

Norfolk, Virginia

Contract No. N62470-02-D-3052

CTO-0060

March 2005

Prepared by

CH²M HILL

Baker

Environmental, Inc.

FINAL
FISCAL YEAR 2005
SITE MANAGEMENT PLAN
MARINE CORPS BASE
CAMP LEJEUNE, NORTH CAROLINA
CONTRACT TASK ORDER 0060

MARCH 2005

Prepared for:

NAVFAC
ATLANTIC DIVISION
Norfolk, Virginia

Under the:

CLEAN III PROGRAM
Contract N62470-02-D-3052

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LIST OF ACRONYMS AND ABBREVIATIONS

1,1,2,2-PCE	1,1,2,2-Tetrachloroethene
AFVR	Aggressive Fluid Vapor Recovery
AOC	Area of Concern
AST	Aboveground Storage Tank
Baker	Michael Baker Jr., Inc.
BTEX	benzene, toluene, ethylbenzene, and total xylenes
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CIP	Community Implementation Plan
CN	Cyanide
CTO	Contract Task Order
CWM	Chemical Warfare Material
DD	Decision Document
DDD	dichlorodiphenyldichloroethane
DDE	dichlorodiphenyldichloroethylene
DDT	dichlorodiphenyltrichloroethane
DNAPL	Dense Non-Aqueous Phase Liquid
DoD	Department of Defense
DoN	Department of the Navy
DRMO	Defense Reutilization Marketing Office
EE/CA	Engineering Evaluation/Cost Analysis
ERH	Electrical Resistance Heating
EQB	Environmental Quality Branch
ERH	Electrical Resistance Heating
ESD	Explanation of Significant Differences
FFA	Federal Facilities Agreement
FS	Feasibility Study
HPIA	Hadnot Point Industrial Area
HRC [®]	Hydrogen Release Compounds [®]
IAS	Initial Assessment Study
IAS	In Situ Air Sparge
IR	Installation Restoration
IRA	Interim Removal Action
IROD	Interim Record of Decision
IRP	Installation Restoration Program
JP	Jet Propulsion

LIST OF ACRONYMS AND ABBREVIATIONS (cont.)

LANTDIV	Naval Facilities Engineering Command, Atlantic Division
LNAPL	Light Non-Aqueous Phase Liquid
LTM	Long Term Monitoring
LTTD	Low Temperature Thermal Desorption
LUCAP	Land Use Control Action Plan
LUCIP	Land Use Control Implementation Plan
LUC	Land Use Control
MCAS	Marine Corps Air Station
MCB	Marine Corps Base
MNA	Monitored Natural Attenuation
mg/kg	milligram per kilogram
NACIP	Navy Assessment and Control of Installation Pollutants
NAE	Natural Attenuation Evaluation
NC DENR	North Carolina Department of Environment and Natural Resources
NCP	National Oil and Hazardous Substances Pollution Control Contingency Plan
NCWQS	North Carolina Water Quality Standards
NFA	No Further Action
Non-TCRA	non-Time Critical Removal Action
NPL	National Priorities List
OU	Operable Unit
PA	Preliminary Assessment
PAH	polynuclear aromatic hydrocarbon
PCB	polychlorinated biphenyls
PCE	tetrachloroethene
PCP	pentachlorophenol
PITT	Partitioning Interwell Tracer Test
POL	petroleum, oil, lubricant
ppb	parts per billion
ppm	parts per million
PRAP	Proposed Remedial Action Plan
Pre-RI	Pre-Remedial Investigation
RAA	Remedial Action Alternative
RAB	Restoration Advisory Board
RABITT	Reductive Anaerobic Bioremediation In-Situ Treatment Technology
RAC	Remedial Action Contractor
RBC	Residential Risk Based Concentration
RD	Remedial Design
RD/RA	Remedial Design/Remedial Action
RI	Remedial Investigation
RI/FS	Remedial Investigation/Feasibility Study
ROD	Record of Decision

LIST OF ACRONYMS AND ABBREVIATIONS (cont.)

SARA	Superfund Amendments and Reauthorization Act
SEAR	Surfactant Enhanced Aquifer Remediation
SI	Site Investigation/Site Inspection
SMP	Site Management Plan
STP	Sewage Treatment Plant
SVE	Soil Vapor Extraction
SVOC	Semivolatile Organic Compound
TCE	trichloroethene
TCL	Target Compound List
TCRA	Time Critical Removal Action
TPH	total petroleum hydrocarbon
TSCA	Toxic Substance Control Act
USEPA	United States Environmental Protection Agency
UST	Underground Storage Tank
VOC	Volatile Organic Compound
WAR	Water and Air Research

1.0 INTRODUCTION

This document presents the Draft Fiscal Year 2005 Site Management Plan (SMP) for Marine Corps Base (MCB), Camp Lejeune, North Carolina. The SMP presents planned activities to be conducted at MCB, Camp Lejeune during Fiscal Year 2005 and provides projections for long-term progress in accordance with the Department of Navy (DoN), Installation Restoration (IR) Program through Fiscal Year 2007. This document has been prepared by Michael Baker Jr., Inc. (Baker) and CH2M HILL for the Atlantic Division, Naval Facilities Engineering Command (LANTDIV) and the MCB, Camp Lejeune IR Program. This document has been submitted to representatives of the North Carolina Department of Environment and Natural Resources (NC DENR), the U.S. Environmental Protection Agency (USEPA), Region IV, and members of the Camp Lejeune IR Restoration Advisory Board (RAB).

1.1 General Description

Located in Onslow County, North Carolina, MCB, Camp Lejeune is host to five Marine Corps commands and two Navy commands. All of the real estate and infrastructure are owned, operated, and maintained by the host command. MCB, Camp Lejeune also provides support and training for the following tenant commands: Headquarters Nucleus, Second Marine Expeditionary Force; Second Marine Division; Second Marine Force Service Support Group; Second Marine Surveillance, Reconnaissance, and Intelligence Group; Sixth Marine Expeditionary Brigade; the Naval Hospital; and the Naval Dental Clinic.

The entire facility includes approximately 236 square miles and is located within the generally flat, Atlantic Coastal Plain. MCB, Camp Lejeune is bisected by the New River, which flows in a southeasterly direction and forms a large estuary before entering the Atlantic Ocean. The Atlantic Ocean forms the southeastern boundary of the facility. The western and northwestern boundaries are U.S. Route 17 and State Route 24, respectively. The City of Jacksonville, North Carolina is located immediately northwest of MCB, Camp Lejeune. A majority of the land surrounding the facility is used for agriculture. Estuaries along the coast support commercial fishing, and residential resort areas are located adjacent to MCB, Camp Lejeune along the Atlantic Ocean.

1.2 Environmental History

MCB, Camp Lejeune has been actively involved with environmental investigations and remediation programs since 1983, beginning with the Navy Assessment and Control of Installation Pollutants (NACIP) Program. An Initial Assessment Study (IAS) was the first investigation of potentially hazardous sites conducted under NACIP. The IAS, which was conducted in 1983 (Water and Air Research, 1983) identified areas of concern that might potentially cause threats to human health and the environment as a result of past storage, handling, and disposal of hazardous materials. Based on a review of historical records, field inspections, and personal interviews, 76 areas of concern (AOCs) were identified. The IAS concluded that, while none of the sites posed an immediate threat to human health or the environment, further investigations to assess the potential long-term impacts were warranted at 23 of the 76 sites.

The Department of Navy's IR Program was initiated in 1986 following enactment of the Superfund Amendments and Reauthorization Act (SARA) legislation. The IR Program, which was implemented to follow the requirements of SARA, replaced the NACIP. MCB, Camp Lejeune was placed on the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) National Priorities List (NPL) on October 4, 1989 (54 Federal Register 41015, October 4, 1989). Following that listing, a Federal Facilities Agreement (FFA) between USEPA Region IV, North Carolina Department of Environment, Health, and Natural Resources (now NC DENR), and the DoN was signed in February 1991. The FFA was prepared to fulfill the following objectives:

- To ensure that potential environmental impacts associated with past and present activities at MCB, Camp Lejeune are thoroughly investigated and appropriate CERCLA response actions are developed and implemented as necessary to protect public health, welfare, and the environment;
- To establish a procedural framework and a schedule for developing, implementing, and monitoring appropriate response actions at MCB, Camp Lejeune in accordance with CERCLA, the National Oil and Hazardous Substances Pollution Control Contingency Plan (NCP), and relevant USEPA remediation policy; and,
- To encourage public participation and facilitate cooperation, and exchange of information among parties associated with the investigation and remediation process.

The original FFA pertained to 23 of the initial sites identified at MCB, Camp Lejeune. The 23 sites have been investigated in accordance with the NCP, CERCLA, and SARA, under the terms and conditions of the FFA. Based upon the conclusions and recommendations identified by subsequent site inspections, 19 newly identified sites throughout MCB, Camp Lejeune have been added to the original list of 23, bringing the total to 42 IR sites.

As part of the requirements established under CERCLA, an administrative record file has been established for the IR Program at MCB, Camp Lejeune. The administrative record is a compilation of all documents that the DoN used to select a remedial action or removal action for a site. Regardless of the nature of the site, an administrative record must be maintained. The administrative record will also serve as the basis for any future legal review of decisions made by the DoN concerning remedial action taken at a site. A copy of the Camp Lejeune administrative record file is available for review at LANTDIV in Norfolk, Virginia, which houses a hard copy of the record. The record can also be accessed electronically at the Onslow County Public Library, which has a dedicated computer for this purpose. In addition, the record can be viewed on-line at: www.Bakerenv.com/Camplejeune_irp.

1.3 Purpose

The Fiscal Year 2005 SMP is a forward-looking management tool and one of the primary documents identified in the FFA. The SMP includes proposed deadlines for completion of deliverables, as specified in the FFA, to be submitted during Fiscal Year 2005. In addition, the SMP identifies IR Program activities projected for the next three-year period (2004-2007).

In addition to the SMP, the Camp Lejeune CERCLA Five Year Review and Community Implementation Plan (CIP) were updated in Fiscal Year 2004. This was the second version of the CERCLA Five Year Review document (initial version in Fiscal Year 1999) and the third version of the CIP (previous version in Fiscal Year 1994).

1.4 Site Listing Changes and Updates

As of August 2004, 42 sites are included in the IR Program at MCB, Camp Lejeune, including 23 sites identified in the original FFA and 19 newly identified sites. Table 1-1 provides a listing of all the IR sites and Table 1-2 provides a listing of activities to be conducted during Fiscal Year 2005. Figure 1-1

depicts all IR sites located throughout MCB, Camp Lejeune. (Note that tables and figures are provided after the text portion of the report.)

Based upon the results of Site Inspections (SI) conducted at MCB, Camp Lejeune during 1991, 1992, and 1993, the following sites were added to the IR Program:

- Site 3 (Old Creosote Plant)
- Site 7 (Tarawa Terrace Dump)
- Site 43 (Agan Street Dump)
- Site 44 (Jones Street Dump)
- Site 54 (Crash Crew Fire Training Burn Pit)
- Site 63 (Verona Loop Dump)
- Site 65 (Engineer Area Dump)
- Site 80 (Paradise Point Golf Course Maintenance Area)
- Site 82 (Volatile Organic Compound [VOC] Disposal Area at Piney Green Road)

Based upon findings from Underground Storage Tank (UST) investigations conducted at MCB, Camp Lejeune during 1994, 1995, and 1996, the following sites were also added to the IR Program:

- Site 88 (Building 25, Base Dry Cleaners)
- Site 89 (Former Defense Reutilization Marketing Office [DRMO])
- Site 90 (Building BB-9)
- Site 91 (Building BB-51)
- Site 92 (Building BB-46)
- Site 93 (Building TC-942)
- Site 94 (Building 1613)

Based upon the investigations conducted to date at the 42 IR sites, the following sites have been closed out and will not require further actions:

- Site 1 (French Creek Liquids Disposal Area)
- Site 7 (Tarawa Terrace Dump)
- Site 9 (Fire Fighting Training Pit at Piney Green Road)

- Site 12⁽¹⁾ (Explosive Ordnance Disposal)
- Site 16 (Former Montford Point Burn Dump)
- Site 21 (Transformer Lot)
- Site 24 (Industrial Area Fly Ash Dump)
- Site 28 (Hadnot Point Burn Dump)
- Site 30 (Sneads Ferry Road Fuel Tank Sludge Area)
- Site 48 (Marine Corps Air Station [MCAS] Mercury Dump)
- Site 65 (Engineer Area Dump)
- Site 68⁽¹⁾ (Rifle Range Dump)
- Site 74 (Mess Hall Grease Dump Area)
- Site 75⁽¹⁾ (MCAS Basketball Court Site)
- Site 76⁽¹⁾ (MCAS Curtis Road Site)
- Site 80 (Paradise Point Golf Course Maintenance Area)
- Site 87⁽¹⁾ (MCAS Officer's Housing Area)
- Site 90 (BB-9)
- Site 91 (BB-51)
- Site 92 (BB-46)

Twenty New Sites of Potential Concern

- PA Sites

In Fiscal Year 2000, the Installation Restoration Section, Environmental Quality Branch (EQB) at MCB, Camp Lejeune identified 20 additional potential sites (not included in the 42) that may require further investigation. The 20 sites consist of six laundry/dry cleaning facilities, eight vehicle maintenance shops, five automobile hobby shops, and one furniture repair shop located at buildings within the Hadnot Point Industrial Area (HPIA), Monfort Point, Tarawa Terrace, Camp Geiger, and the Air Station. These sites are listed in the "Plants Account Facilities Inventory Listing of Buildings and Structures, 30 June 1990, Marine Corps Base, Camp Lejeune, North Carolina." Based on the review of historical information, eight of the sites were removed from further actions in the second quarter of Fiscal Year 2002. A Draft Preliminary Assessment (PA) Report was completed in May 2002 for the remaining 12 sites. Figure 1-1 shows the locations of the 20 sites identified.

⁽¹⁾ Pre-RI Sites

Three of these 12 sites are located within or near areas previously studied under Remedial Investigation (RI) activities associated with Site 78. It was decided at the June 2002 Partnering Meeting that these sites could also be removed from the PA process if it could demonstrate that the sites have not been impacted. Additional soil and groundwater sampling was performed at these three sites in July 2002 to determine if these media have been impacted by past operations. Results of these findings will be presented in the Final PA Report, which will be completed in Fiscal Year 2005. It is anticipated that eight sites will be recommended for no further action (Buildings 902, 908, 1120, 1124, 1409, 1512, TC830, and SM173). Four sites (SAS113, AS116, AS119, and M119) were recommended for preliminary sampling, which was completed in the 3rd quarter of Fiscal Year 2004.

In June 2004, Building M315 was identified by base personnel as a potential former dry cleaning facility. To evaluate this site, four soil and groundwater samples were collected around the building to assess if the area had been impacted by former activities. The data did not indicate that there were impacts from the facility. Additional document review of Building M315 was conducted and revealed that this facility was used as a "drop-off and pick-up" location for the base dry cleaning facility. The Camp Lejeune Partnering team agreed that Building M315 did not need further investigation based on this building not being used as a dry cleaning facility.

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In June 2001, the initial Land Use Control (LUC) maps for Operable Units (OUs) 1, 2, 4, 5, 7, 8, 12, 13, and 14 were completed in accordance with the Land Use Control Action Plan (LUCAP) for the Base. The maps are updated on an annual basis to modify the boundaries as needed. Table 1-3 provides a summary of the LUC boundaries based on the July 2002 maps. The LUC boundaries for Sites 36, 43, 44, and 54 were updated in 2004 to coincide with the Record of Decision (ROD).

1.5 Federal Facilities Agreement

As noted in Section 1.2, an FFA was signed for Camp Lejeune in 1989. This agreement was created under CERCLA Section 120 (page 2) and was signed by the Navy, the USEPA and the state of North Carolina. At the present time, there are no specific requirements to amend the FFA. If, however, amendments to the FFA are necessary, a summary of the changes will be outlined in this section of the SMP.

1.6 Site Management Plan Format

The Fiscal Year 2005 SMP for MCB, Camp Lejeune consists of six sections. Section 1.0 describes the purpose of the SMP, the overall history of environmental program activities at MCB, Camp Lejeune, and the FFA. Section 2.0 describes the history and current status of each OU and each Pre-RI site at MCB, Camp Lejeune. A summary of ongoing and planned activities associated with each OU and each Pre-RI site is provided in Section 3.0. Also provided within Section 3.0 of the SMP are schedules for conducting CERCLA activities and specific target submittal dates for Fiscal Year 2005 documents. Previous, ongoing, and planned removal actions are presented in Section 4.0. Lastly, references are provided in Section 5.0.

2.0 OPERABLE UNITS

As defined in the NCP, an "Operable Unit" is an incremental step toward comprehensively addressing site problems. This portion of a remedial response action is devised to either eliminate or mitigate a release, threat of a release, or pathway of exposure. The cleanup of a particular OU may be divided into a number of sites, depending on the complexity of the problems associated with the OU. OUs may address geographical portions of a site, specific site problems, initial phases of an action, or may consist of any set of actions performed over time in different parts of a site. In accordance with guidance provided in the NCP, the Navy and Marine Corps have recommended that 35 of the 42 IR Program sites be grouped into 21 OUs to proceed with RI/Feasibility Study (FS) activities. Seven sites (10, 12, 68, 75, 76, 85, and 87) are in or were previously in the Pre-RI phase and have not been assigned to OUs. Each of the 21 OUs is listed in Table 2-1, and their locations are depicted in Figure 1-1.

Section 2.0 of the SMP identifies each of the 21 OUs at MCB, Camp Lejeune where IR Program activities have been implemented or will be implemented in the future. Anticipated project start and completion dates for the IR Program are also identified. The project start dates reflect the priority of each OU based on the potential releases of contamination, proximity to receptors, contaminants verified, and potential ecological impacts as well as the availability of funding. A summary of IR Program activities conducted since the program's inception is provided in Table 2-2.

The Long-Term Monitoring (LTM) program at MCB, Camp Lejeune has been in operation since 1995 under the IR Program. Sites 2, 24, and 78 were the original sites included in the program. Four sites have been permanently removed from LTM since 1995 (Sites 1, 24, 28, and 74). As of August 2004, 14 sites are included in the LTM program, of which seven sites have signed RODs or Interim RODs (IROD). LTM is also being performed at the other non-ROD sites to collect post-RI data in support of the final remedy. Table 2-3 provides a summary of sites and monitoring wells currently in the LTM program.

2.1 Operable Unit No. 1 (Sites 21, 24, and 78)

An IROD was signed on September 23, 1992 for the shallow aquifer (Baker, 1992). The Final ROD for OU No. 1 was signed on September 15, 1994 (Baker, 1994a).

The Final ROD outlines remedial actions to be implemented at OU No. 1, and includes separate remedial actions for each site as follows:

- The selected remedial action alternative (RAA) for Site 21 addressed surface soils within three separate AOCs. The RAA included excavation of contaminated soil from Site 21, off-site treatment of the soil, and finally disposal of the soil at a permitted facility.
- The RAA for Site 24 required periodic monitoring of groundwater conditions that presumably had been adversely impacted by previous site operations. Groundwater samples from three monitoring wells were collected periodically and evaluated to determine the effectiveness of the selected remedy. The monitoring program at Site 24 was implemented during July 1996 and the requirements for completing the monitoring program were achieved in 1998.
- The RAA at Site 78 includes remediation of the shallow aquifer using an extraction and on-site treatment system, coupled with a groundwater monitoring program. Based upon site investigative results, separate groundwater extraction and treatment systems were constructed in the northern and southern portions of the study area. In addition to groundwater treatment, groundwater samples from monitoring wells and the treatment plants are being collected on a semiannual basis to determine the effectiveness of the entire remedial approach. The two treatment plants have been in operation since 1995.

2.1.1 Site 21 - Transformer Storage Lot 140

Site 21 is located within Site 78, between Ash Street and Sneads Ferry Road on Center Road. In 1950 and 1951, a pit, located in the northern portion of the site, was used as a drainage receptor for oil from transformers. Site 21 was also used from 1958 to 1977 for pesticide mixing and as a cleaning area for pesticide application equipment. The mixing area for the pesticides was in the southern portion of the site.

The RI conducted at Site 21 concluded that soils within portions of the site were impacted by pesticides and polychlorinated biphenyls (PCBs). A soil removal action was implemented at Site 21 to remove pesticide and PCB contaminated soil. Initial excavation in three AOCs were performed during Fiscal Year 1995. A Land Use Control Implementation Plan (LUCIP) that restricts development to

industrial land use and use of groundwater is in place. No additional remedial actions are planned for Site 21.

Site Chronology – Site 21

Event	Date
Oil from electric transformers was drained into a disposal pit in the northern portion of the site.	1950 to 1951
Pesticide mixing and wash down area for equipment used during the application of pesticides.	1958 to 1977
Initial Assessment Study (IAS)	1983
Confirmation Study	1984 through 1987
RI	1993
Final ROD	1994
Explanation of Significant Differences (ESD)	1995
Excavation of three AOCs	1995
Land Use Controls (LUCs) prepared	2001 (updated July 2002)
Plat maps prepared	2001

2.1.2 Site 24 - Industrial Area Fly Ash Dump

Site 24 is located south and east of the intersection of Birch and Duncan Streets, adjoining Site 78. Approximately 100 acres in size, the site lies adjacent to upstream portions of Cogdels Creek. Site 24 was used for the disposal of fly ash, cinders, solvents, used paint stripping compounds, sewage sludge, and water treatment sludge from the late 1940s to 1980.

A Remedial Investigation/Feasibility Study (RI/FS) was conducted at Site 24 during 1993-1994. Due to elevated pesticide (heptachlor epoxide) levels in groundwater, a monitoring program was implemented in 1995. After four consecutive quarterly sampling periods without any pesticide detections, the monitoring program at Site 24 was discontinued. Land and aquifer use controls were implemented through a LUCIP that was completed during Fiscal Year 2001. No additional remedial actions are planned for Site 24. A final monitoring report was completed in Fiscal Year 2001 to serve as an interim document before a final closeout report is prepared for the entire OU.

Site Chronology – Site 24

Event	Date
Disposal of fly ash, cinders, solvents, used paint stripping compounds, sewage sludge, and water treatment spiractor sludge	Late 1940s to 1980
Disposal of construction debris	Late 1960s
IAS	1983
Confirmation Study	1984 through 1987
RI	1993
Final ROD	1994
Groundwater Monitoring Program	1996 to 1997
LUCs prepared	2001(updated July 2002)
Plat maps prepared	2001
Final Monitoring Report Prepared	2001

2.1.3 Site 78 - Hadnot Point Industrial Area

The HPIA is the area bounded by Holcomb Boulevard to the west, Sneads Ferry Road to the north, Louis Street to the east, and the Main Service Road to the south. A former transformer storage lot (Site 21), the HPIA fuel farm (formerly Site 22), an active service station (Site 94) and various other potential source areas are located within HPIA. The HPIA is comprised of approximately 590 acres and includes maintenance shops, gas stations, administrative offices, printing shops, warehouses, storage yards, and other similar industrial facilities.

An interim remedial action RI/FS was conducted at Site 78 concerning the shallow groundwater aquifer in 1992. Based on this initial study, an interim remedial action groundwater extraction and treatment system was installed in 1995. An RI/FS was completed at Site 78 in 1994. The results of this investigation indicated that organics (e.g., solvents and fuel-related compounds) had affected the groundwater within certain areas of the study area.

Separate groundwater extraction and treatment systems were constructed in the northern (also referred to as Site 78 North) and southern (also referred to as Site 78 South) portions of Site 78. Groundwater extraction and treatment operations and monitored natural attenuation (MNA) of the groundwater are currently ongoing. Operations at the south plant were temporarily discontinued from January 2000 through May 2002 to allow for the completion of the MNA study. Initial MNA studies were completed in Fiscal Year 2002 for both Sites 78 North and South. Land and aquifer use controls were

implemented through a LUC that was completed during Fiscal Year 2001. The LUC was updated in Fiscal Year 2002.

A supplemental investigation was conducted in June 2002 to further characterize groundwater at Site 78 South in the ball field area of the site. Soil samples were also collected at several known "hot spot" areas within both Sites 78 South and North. The additional groundwater data indicated that the plume at Site 78 South extends further south and southwest than delineated during the Natural Attenuation Study (NAE) Study. VOCs and benzene, toluene, ethylbenzene, and toluene (BTEX) compounds were detected in soil samples collected from within several known "hot spot" areas.

During Fiscal Year 2003, pilot studies were initiated at two groundwater "hot spot" areas (one at Site 78 North and one at Site 78 South). Oxygen Release Compounds[®] (ORC[®]) were injected into the vinyl chloride plume at Site 78 North (near Building 903) and Hydrogen Release Compounds[®] (HRC[®]) were injected into the trichloroethene (TCE) plume at Site 78 South (near Building 1601) to reduce the contaminant mass at each area. Six post-injection groundwater sampling events, completed to evaluate the effectiveness of the ORC[®]/HRC[®] treatments, were completed in the 4th quarter of Fiscal Year 2004. In addition, soil gas samples were collected from the vadose zone within the treatment areas prior to the injections (one round) and after the injections (four rounds).

The Pilot Study Evaluation Report will be completed in Fiscal Year 2005. Should either or both technologies demonstrate to be effective, then these technologies could be applied to other plume areas within the site and an Amended Proposed Remedial Action Plan (PRAP) and ROD may be prepared to change the remedial actions for groundwater at Site 78. The potential target completion dates of the Amended PRAP and ROD are Fiscal Year 2006. Accordingly, the remedial actions on the remaining groundwater plumes would start after the Amended ROD is signed and may employ HRC[®] and/or ORC[®] if shown successful during the Pilot Study. Should these technologies prove to be ineffective in meeting the treatment goals, however, other technologies may also be considered for the amendments.

MNA monitoring will also continue through Fiscal Year 2005 to further monitor plume movement and to continue the evaluation of the pump and treatment systems.

Site Chronology – Site 78

Event	Date
Petroleum and solvent related spills and leaks	Beginning in the 1940s
IAS	1983
Confirmation Study	1984 through 1987
Groundwater Study at Hadnot Point Fuel Farm	1990
Supplemental Characterization Step	1990 and 1991
Interim Remedial Action RI/FS	1992
OU/RI/FS	1993 to 1994
ROD	1994
Excavation of one AOC	1995
Groundwater treatment plants in operation	1995
LTM Program	1995 to present
ESD	1995
New recovery wells installed at the north and south treatment plants	1998
Optimization Study conducted on treatment systems	1999
South treatment plants shut down	2000
Site 78 North NAE started	2000
Site 78 South NAE started	2001
South treatment plant back on-line	2002
LUCs prepared	2001 (updated July 2002)
Plat maps prepared	2001
Selected recovery wells at north and south treatment plant shut down for pilot test	2002
Supplemental Investigation	2002
NAE studies completed	2002
Technology Evaluation for Groundwater Pilot Study	2002
Site 78 PA sites investigated	2002
Groundwater Pilot Study	2003 to present

2.2 Operable Unit No. 2 (Sites 6, 9, and 82)

The Final ROD for OU No. 2 was signed on September 24, 1993 (Baker, 1993a). The RAA at Sites 6 and 82 includes remediation of the shallow and deep aquifers using an extraction and on-site treatment system, coupled with a groundwater monitoring program. In addition to groundwater treatment, groundwater samples from recovery wells and the treatment plant are collected on a semiannually and monthly basis, respectively, to determine the effectiveness of the entire remedial approach. The treatment plant has been in operation since 1996. Due to the minimal impact of fire training activities upon the study area, there were no immediate remedial actions required in the ROD at Site 9. During Fiscal Year 2000, a new petroleum, oil, lubricant (POL) Fire Training Pit was completed at Site 9.

2.2.1 Site 6 (Storage Lots 201 and 203) and Site 82 (Piney Green Road VOC Area)

Sites 6 and 82 adjoin one another and comprise over 200 acres. The sites are bounded by Wallace Creek to the north, Site 9 to the south, Piney Green Road to the east, and Holcomb Boulevard to the west. Prior to the late 1980s, much of the northern area (i.e., Storage Lot 203 and Site 82) was reportedly used for storage, disposal, and handling of potentially hazardous waste and materials. During the initial site reconnaissance in 1991, soil mounds were noted throughout the northern portion of the sites. Currently, Lot 201 is used for equipment staging and much of the former wooded areas have been converted to open storage. Most of Lot 203 remains an open field and the front 21 acres are temporarily being used by the Defense Reutilization Marketing Office (DRMO) for metal staging operations. The groundwater extraction and treatment operations building and contractor field offices are located on the northeastern portion of Lot 203.

An RI/FS at OU No. 2 was initiated during August 1992 and completed in September 1993 with the Final ROD. Several AOCs were identified during the investigation. Soil and groundwater sampling conducted during the RI revealed elevated levels of VOCs. Chlorinated solvents in groundwater were found as deep as 240 feet below ground surface. Groundwater remains contaminated with solvents such as tetrachloroethene (PCE), TCE, 1,2-dichloroethene, 1,1,2,2-tetrachloroethene (1,1,2,2-PCE) and vinyl chloride.

A time-critical removal action (TCRA) was conducted for the removal of the debris and soil in 1994. Twenty drums of dichlorodiphenyl trichloroethane (DDT) were removed and contaminated soil was excavated during the removal action. Another TCRA was conducted in 1995 and 1996 to remove drums, batteries, and communications wire. The soil was contaminated with POLs. In addition, a soil vapor extraction (SVE) system was in operation at Site 82 for six months in 1996 to remediate residual soil contamination in the vadose zone.

Construction of a groundwater extraction and treatment system was initiated in December 1994 and full-scale operation of the treatment system began in July 1996. Groundwater from both the surficial and Castle Hayne aquifers is being treated by this system at Site 82. Operation of the plant will continue in Fiscal Year 2005. An optimization study of the system and a technology evaluation report to assess other potential groundwater remedial technologies are also planned for Site 82, possibly in Fiscal Year 2005 or 2006.

During Fiscal Year 1997, a monitoring program was initiated. Monitoring and recovery wells, and surface water and sediment are sampled on a semiannual basis. Monitoring and treatment system monitoring reports will be provided on a semiannual and annual basis during Fiscal Year 2005. Throughout the history of LTM at Site 6, groundwater monitoring well 6-GW16 has returned intermittent and varied detections of chlorobenzene. Accordingly, a focused field investigation near this monitoring well was completed in 3rd quarter Fiscal Year 2004 to determine the horizontal and vertical extent of the chlorobenzene contamination. Results of the investigation indicated localized chlorobenzene detections in both the soil and groundwater in the vicinity of monitoring well 6-GW16. A Technical Evaluation Report for Sites 6 and 82 will be completed in Fiscal Year 2005.

The ROD also includes institutional controls as part of the selected remedy. These controls include land and aquifer use controls that were implemented through a LUC that was completed in Fiscal Year 2001. The LUC was updated in Fiscal Year 2002.

Site Chronology – Sites 6 and 82

Event	Date
Lot 201 stored pesticides and transformers containing PCBs	1940s to late 1980s
Lot 203 served as a waste disposal area (various chemicals including PCBs, cleaning solvents, used batteries, and waste oils). Pesticides were also stored here.	1940s to late 1980s
IAS	1983
Confirmation Study	1984 through 1987
Soil gas survey at Lot 203	1989
SI at Site 82	1991
OU2 RI/FS	1992 to 1993
ROD	1993
TCRA	1994
Second TCRA	1995
SVE at Site 82	1996
Groundwater treatment system operating	1996 to present
LTM	1997 to present
LUCs prepared	2001 (updated July 2002)
Plat maps prepared	2001
Chlorobenzene Investigation near Monitoring Well 6-GW16.	2004

2.2.2 Site 9 - Fire Fighting Training Pit at Piney Green Road

Site 9 is located immediately south of Site 6 and west of Piney Green Road. The area encompasses approximately 2.6 acres. The original fire training area consisted of a concrete-lined pit with an oil and water separator. There were four 500-gallon aboveground storage tanks (ASTs) located near the training area that are no longer present. The pit has been used for training since the early 1960s. Prior to 1981, the training exercises were conducted in an unlined pit (the pit is now concrete-lined). Flammable liquids including heating oil, solvents, and fuels are used as accelerants during the training exercises.

Soil and groundwater samples collected during the RI in 1992 did not reveal extensive contamination. Accordingly, no remedial actions were required at this site based on the RI findings.

During Fiscal Year 2000, the new POL Fire Training Pit was completed. The new training facility employs a petroleum source for burning operations and the pit is lined with high temperature concrete. During the installation of the new facility, POL contaminated soils were excavated and removed from the site. No additional remedial actions are planned for Site 9.

Site Chronology – Site 9

Event	Date
Fire training exercises	Early 1960s to present
Using an unlined pit	Early 1960s to 1981
Using an asphalt lined pit	1981 to 2000
New facility with concrete lined pit	2000 to present
IAS	1983
Confirmation Study	1984 through 1987
OU2 RI	1992 to 1993
ROD	1993
LUCs prepared	2001 (updated July 2002)
Plat maps prepared	2001

2.3 Operable Unit No. 3 (Site 48)

The Final ROD for OU No. 3 was signed on September 10, 1993 (Baker, 1993b). There were no remedial actions required in the ROD for Site 48, due to the absence of contamination.

2.3.1 Site 48 - MCAS Mercury Dump

Site 48 is located within MCAS, New River. The site is bounded by Longstaff Road to the west and to the east by the New River. An unnamed tributary to the New River borders the site to the north. The site includes approximately four flat acres and consists of Building AS-804 and a lawn area behind the building. During the late 1950s to the mid-1960s, Building AS-804 was used for developing photographs. Mercury was drained from radar units and disposed in small quantities behind the building. It was reported that approximately one gallon of mercury per year over a ten-year period was disposed in this manner. Building AS-804 is currently used as a classroom training facility.

During the 1992 RI/FS, historical aerial photographs were obtained and evaluated in order to identify the suspected disposal area(s). A geophysical investigation was also performed to identify the presence of mercury. The geophysical investigation did not reveal anything associated with mercury disposal. A soil and groundwater investigation was conducted, focusing on the anomalies identified in the aerial photographs. The results of this study did not identify mercury in either soil or groundwater. The RI concluded that the absence of mercury at Site 48 was most likely due to washout of the area and periodic flooding during severe storms because of its proximity to the New River. No additional remedial actions are planned for Site 48.

Site Chronology – Site 48

Event	Date
Mercury was drained from radar units in woods near Building AS-804	1956 to 1966
IAS	1983
Confirmation Study	1984 through 1987
Supplemental Characterization	1991
RI	1992
ROD	1993

2.4 Operable Unit No. 4 (Sites 41 and 74)

The Final ROD for OU No. 4 was signed on December 5, 1995 (Baker, 1995a). The selected remedy for Site 41 includes long-term groundwater, surface water, and sediment monitoring and land use restrictions. The selected remedy for Site 74 also includes land use restrictions and long-term groundwater monitoring. The requirements for completing the monitoring program at Site 74 were achieved in 1998.

2.4.1 Site 41 - Camp Geiger Dump Near Former Trailer Park

Site 41 is located within the Camp Geiger area of MCB, Camp Lejeune and is comprised of approximately 30 acres. The site is situated between Highway 17 to the west, Tank Creek to the south, an unnamed tributary to the north, and an unimproved road to the east. From 1946 to 1970, the area was used as an open burn dump. Construction debris, POL wastes, mirex (a pesticide), solvents, batteries, ordnance, and chemical training agents were reportedly disposed at Site 41. The debris was reported to be burned and graded over with soils.

An RI/FS was initiated in December 1993 and completed in May 1995. Results of the RI indicated that the site contains a significant amount of buried construction debris. Analytical results indicated that surface soil in the central portion of the study area was contaminated with polynuclear aromatic hydrocarbon (PAH) compounds, most likely the result of previous burning activities. Groundwater samples obtained from the site exhibited chromium, iron, lead, and manganese above North Carolina 2L Water Quality Standards (NCWQSs) for groundwater. The human health risk assessment concluded that there were no risks to human health because groundwater in this area is not used as a potable supply. The ecological risk assessment concluded that potential adverse impacts to ecological receptors were low due to the low levels of contamination in soil, sediment, and surface water.

A groundwater reclassification and surface water variance were requested due to the nature of potential contamination that could not feasibly be remediated. In August 1997, a letter from NC DENR Wilmington Regional Office informed MCB, Camp Lejeune that based on limited site contamination; the groundwater reclassification and surface water variance were no longer required.

The selected remedy for Site 41 includes groundwater and surface water monitoring, and aquifer and land use controls prohibiting development of the site. These controls were implemented through a

LUC that was completed in Fiscal Year 2001 and updated in Fiscal Year 2002. The decision to restrict development of the site is based on the former use of the site as a dump. The Army Corps of Engineers may be involved with issues in the future regarding the chemical training agents. The final monitoring event was completed in the 4th quarter of Fiscal Year 2004. Accordingly, the Final OU Close Out Report is planned for Fiscal Year 2005 pending review of the final sampling event data at Site 41.

Site Chronology – Site 41

Event	Date
Open burn dump	1946 to 1970
IAS	1983
Confirmation Study	1984 through 1987
RI/FS	1995
ROD	1995
LTM	1997 to 2004
LUCs prepared	2001 (updated July 2002)
Plat maps prepared	2001

2.4.2 Site 74 - Mess Hall Grease Disposal Area

Site 74 is located approximately one-half mile east of Holcomb Boulevard in the northeast section of MCB, Camp Lejeune just north of Henderson Pond. During the early 1950s through the early 1960s, grease from the mess hall was reportedly taken to the area and disposed in trenches. It was also reported that drums containing PCBs and "pesticide soaked bags" were taken to the site and buried. Chemical training agents in the form of test kits, similar to the types documented at Site 69, also were reportedly taken to Site 74.

An RI was conducted at Site 74 in conjunction with Site 41. Historical aerial photographs of Site 74 depict extensive trenching operations. Results of the RI did not indicate widespread contamination. Some pesticides were detected in soil at the former pest control area, and one monitoring well exhibited low levels of a pesticide. Based on the results of the human health and ecological risk assessments, Site 74 possesses no unacceptable risks.

The selected remedy for Site 74 includes land use controls prohibiting the development of the site, restrictions on the use of the groundwater as a potable supply, and groundwater monitoring.

Monitoring was discontinued in July 1998 because detected metal concentrations are indicative of naturally occurring metals in the presence of acidic soils. The decision to restrict development of the site is based on the former use of the site as a dump. The Army Corps of Engineers may be involved with issues in the future regarding the CWM. These land use controls were implemented through a LUC that was completed in Fiscal Year 2001 and updated in Fiscal Year 2002.

A final monitoring report was completed in Fiscal Year 2002 to serve as an interim document before a final closeout report is prepared for the OU. As noted above, the Final OU Close Out Report is planned for Fiscal Year 2005 pending review of the final sampling event data at Site 41.

Site Chronology – Site 74

Event	Date
Grease, pesticide, and reported chemical training agents disposal	Early 1950s to early 1960s
IAS	1983
Confirmation Study	1984 through 1987
RI/FS	1995
ROD	1995
LTM	1997 – 1998
LUCs prepared	2001 (updated July 2002)
Plat maps prepared	2001
Final LTM Report	2001

2.5 Operable Unit No. 5 (Site 2)

The Final ROD for OU No. 5 was signed on September 15, 1994 (Baker, 1994b). The ROD stipulated completing a TCRA for the pesticide contaminated soils, which was initiated in January 1994. For groundwater, the ROD stipulated institutional controls, including groundwater monitoring, which was implemented at Site 2 in 1995.

2.5.1 Site 2 - Former Nursery/Day Care Center

Site 2 is located at the intersection of Holcomb and Brewster Boulevards, just inside the main gate of MCB, Camp Lejeune. From 1945 to 1958, an on-site building (No. 712) was used for the storing, handling, and dispensing of pesticides. This building was later used as a day care center for children. Chemicals known to have been used at Site 2 include chlordane, 4,4'-DDT, diazinon, and 4,4'-dichlorodiphenyldichloroethane (DDD). Chemicals known to have been stored at this site include dieldrin, lindane, malathion, and silvex. A preliminary soil sampling investigation conducted in 1982 indicated the presence of pesticides. Based on these results, the day care center was moved to another location. Building 712 is currently being used as a personnel office for non-appropriated funding personnel.

An RI/FS was initiated in April 1993 and completed in September 1994. Based on results of the RI/FS, elevated levels of pesticides were detected in soil near the former mixing pads. In addition, a plume consisting of low levels of ethylbenzene and toluene was present in the shallow aquifer. Ethylbenzene and toluene are known constituents in petroleum based pesticides similar to what was used on Site 2. Contamination of site environmental media was believed to be the result of small spills, washout, and excess disposal.

A TCRA was initiated in January 1994. The TCRA involved the excavation and off-site treatment of pesticide-contaminated soil and concrete. A total of 1,049 tons of pesticide contaminated soils were excavated and sent for off-site disposal.

Institutional controls and groundwater monitoring were implemented at Site 2. Aquifer and land use controls were implemented through a LUC that was completed in Fiscal Year 2001 and updated in Fiscal Year 2002. A groundwater monitoring program was initiated in 1995 and will continue on a semiannual basis in Fiscal Year 2005.

Site Chronology – Site 2

Event	Date
Storage, handling, and dispensing of pesticides at Building 712	1945 to 1958
Former Storage Area used to store bulk materials and vehicles	1945 to 1958
IAS	1983
Confirmation Study	1984 through 1987
Geophysical investigation	1992
Additional geophysical investigation	1994
Limited groundwater sampling program	1992
RI/FS	1993 to 1994
TCRA	1994
ROD	1995
LTM	1995 to present
LUCs prepared	2001 (updated July 2002)
Plat maps prepared	2001

2.6 Operable Unit No. 6 (Sites 36, 43, 44, and 54)

As of this draft document, signatures for the Final ROD at OU No. 6 are pending and are expected in September 2004 (will be provided in the final). The ROD will stipulated LUCs for soil at all four sites, and MNA and LUCs for the groundwater at Site 36.

The remedies selected as detailed in the Final PRAP were presented at the public meeting held on June 18, 2002. Due to the national debate between the USEPA and the DoD regarding enforcement issues of the LUCs, completion of the Final ROD was temporarily delayed. Accordingly, an Action Memorandum was also presented at the public meeting for completing interim response removal actions at Sites 36 and 43. An Engineering Evaluation/Cost Analysis (EE/CA) was completed in early Fiscal Year 2003 as part of the interim response removal action. The Final Action Memorandum was also signed in early Fiscal Year 2003 and the removal actions were completed in early Fiscal Year 2004.

2.6.1 Site 36 - Camp Geiger Dump Area

Site 36 is located approximately 1,000 feet east of Camp Geiger and 500 feet west of the New River, adjacent to the Camp Geiger Sewage Treatment Plant (STP). Camp Geiger is situated directly north of MCAS, New River, and approximately three miles southwest of Jacksonville, North Carolina. Site 36 was originally estimated to be approximately 1.5 acres in size. However, based upon a review of

aerial photographs and observations recorded during a site scoping visit, the size of the site was adjusted to include nearly 20 acres. The site was reported to have been used for the disposal of mixed industrial wastes including trash, waste oils, solvents, and hydraulic fluids. Some of the materials were burned before burial. The dump was active from the late 1940s to the late 1950s.

An RI field investigation at Site 36 commenced during February 1995 and continued through May 1995. Additional monitoring wells were installed and a second round of groundwater samples was collected in July of 1995. Additional soil borings and two sediment samples were collected in October of 1995. The RI indicated that positive detections of organic compounds in groundwater were limited to the northern and western portions of the study area. The presence of volatile compounds was confirmed by results of the second groundwater sampling round. In addition, PCBs were detected among soil samples obtained from the western portion of the site. A limited number of volatile and pesticide compounds were also detected among surface water and sediment samples.

Removal of the PCB-contaminated soil was completed during Fiscal Year 1998 as part of a Non-Time Critical Removal Action (non-TCRA). The PCB impacted area was located in the northwestern region of the site at the intersection of two dirt roads.

Site 36 was placed in the monitoring program in 1998. Groundwater samples were initially collected at this site on a quarterly basis, but the sampling was reduced to semiannual in 2000. Surface water samples from Brinson Creek are also collected under the monitoring program. Additional monitoring wells were installed in Fiscal Year 2003 at Site 36 to provide more data to support the LTM program. Monitoring of the groundwater and surface water will continue in Fiscal Year 2005.

Three temporary groundwater monitoring wells were installed on private property across Brinson Creek from the Base and sampled (for TCE only) in June 2000 to determine if contaminants were migrating off Base property. The data indicated non-detectable levels of TCE in all three wells. In addition, groundwater elevation data from the temporary wells confirmed that groundwater within the surficial aquifer discharges into Brinson Creek.

The remedies selected as detailed in the Final PRAP were presented at the public meeting held on June 18, 2002. Due to the national debate between the USEPA and the DoD regarding enforcement issues of the LUCs, completion of the Final ROD was temporarily delayed. Accordingly, an Action Memorandum was also presented at the public meeting for completing interim response removal

actions at Site 36. An Engineering Evaluation/Cost Analysis (EE/CA) was completed in early Fiscal Year 2003 as part of the interim response removal action (IRA). The IRA was completed at Site 36 in 2003, prior to the Final ROD. The primary focus of the IRA was the removal of PAH and pesticide contaminated soil in four areas within the south central portion of the site. A total of 1629.9 tons of soil was excavated during the removal action (Shaw, 2003).

As noted, the Final ROD is pending, but it is anticipated that ROD will include MNA for groundwater and LUCs for soil. The LUCs will be implemented through the Remedial Design (RD) document (anticipated in FY 2005) for intrusive activities and non-industrial land uses in areas where lead impacted soil exceeded the EPA Action Level of 400 parts per million (ppm), and for the former soil contaminated areas.

Site Chronology – Site 36

Event	Date
Active disposal area	Late 1940s to late 1950s
IAS	1983
Confirmation Study	1984 through 1987
RI/FS	1995 to 1998
Non-TCRA for PCBs	1998
LTM	1998 to present
Monitoring wells installed and sampled across Brinson Creek	2000
Revised FS	2002
Final PRAP	2002
Final Action Memorandum	2002
Final EE/CA	2002
Interim Removal Response Action	2003

2.6.2 Site 43 - Agan Street Dump

Site 43 is comprised of approximately 11 acres and is located within the operations area of MCAS, New River, and two miles west of the main entrance. The site is bordered to the north by Edwards Creek and to the east and south by Strawhorn Creek. The Agan Street Dump reportedly received inert material such as construction debris (i.e., fiberglass and lumber) and trash. Sludge from a former sewage disposal facility located adjacent to the study area was also dumped onto the ground surface of Site 43. It is not clear when disposal operations took place.

The RI field investigation commenced in February 1995 and continued through May 1995. Positive detections of semivolatile organic compounds (SVOCs) among soil samples obtained at Site 43 were primarily limited to a cleared portion of the study area adjacent to the gravel access road. In general, higher concentrations of pesticides were observed in samples obtained from a small portion of the study area with partially buried containers. No other organic compounds were detected among groundwater samples obtained from the shallow and deep aquifers.

A surficial metallic debris removal action was performed during July 1995. Approximately 7.3 tons of metallic debris was removed for recycling recovery.

The remedies selected as detailed in the Final PRAP were presented at the public meeting held on June 18, 2002. Due to the national debate between the USEPA and the DoD regarding enforcement issues of the LUCs, completion of the Final ROD was temporarily delayed. Accordingly, an Action Memorandum was also presented at the public meeting for completing interim response removal actions at Site 43. An EE/CA was completed in early Fiscal Year 2003 as part of the interim response removal action (IRA). The IRA was completed at Site 43 in 2003, prior to the Final ROD. The primary focus of the IRA was the removal of PAH contaminated soil in one area located in the western portion of the site. A total of 1476.7 tons of soil were excavated during the removal action (Shaw, 2003).

As noted, the Final ROD is pending, but it is anticipated that no additional remedial action or monitoring will be required for Site 43. A LUC will be implemented through the RD document (anticipated in Fiscal Year 2005) for intrusive activities within the site boundary to restrict excavation activities since the site was a former dump.

Site Chronology – Site 43

Event	Date
Active disposal area	Unknown
IAS	1983
SI	1991
RI/FS	1995 to 1998
Surficial metallic debris removal action	1995
Revised FS	2002
Final PRAP	2002
Final Action Memorandum	2002
Final EE/CA	2002
Interim Removal Response Action	2003

2.6.3 Site 44 - Jones Street Dump

Site 44 encompasses approximately 5 acres and is located at the northern terminus of Baxter Street, behind base housing units along Jones Street within the New River operations area. The site is bordered to the north and west by Edwards Creek, to the south by base housing units along Jones Street, and to the east by woods and an unnamed tributary to Edwards Creek. Edwards Creek flows east from the study area toward Site 43, which is located about 2,000 feet to the east. Site 44 was reportedly in operation during the 1950s. Although the quantity of waste is not known, debris, cloth, lumber, and paint cans were reportedly disposed of at the site.

A RI field investigation at Site 44 commenced in February 1995 and continued through May 1995. A total of four semivolatile contaminants, including two PAH compounds, were identified during the soil investigation at Site 44. The pesticides 4,4'-dichlorodiphenyldichroethylene (DDE), 4,4'-DDD, and 4,4'-DDT were the most widely distributed compounds in the soil. Inorganics were the most prevalent and widely distributed constituents in groundwater at Site 44. Positive detections of organic compounds were limited to two monitoring wells. A total of six VOCs were detected among the 13 surface water samples obtained from Edwards Creek. VOCs were not detected in any of the ten sediment samples obtained from Edwards Creek.

The occurrence of VOCs among the limited groundwater and surface water samples obtained from the study area was traced to Site 89, located upgradient of Site 44.

As noted, the ROD for Site 44 is pending, but it is anticipated that no additional remedial action or monitoring will be required for Site 44. A LUC will be implemented through the RD document (anticipated in Fiscal Year 2005) for intrusive activities within the site boundary to restrict excavation activities since the site was a former dump.

Site Chronology – Site 44

Event	Date
Active disposal area	1950s
IAS	1983
SI	1991
RI/FS	1995 to 1998

2.6.4 Site 54 - Crash Crew Fire Training Burn Pit

Site 54 is located near the southwest end of runway 5-23, within the operations area of MCAS, New River. The burn pit investigated during the RI was approximately 50 feet in diameter and was situated at the center of this 1.5-acre site. Fire training exercises were conducted within the burn pit using Jet Propulsion (JP)-type fuel, which was stored in a nearby UST. An oil and water separator, located approximately 100 feet to the southeast of the burn pit, was used for temporary storage and collection of the spent fuel. Site 54 has served as a fire training burn pit since the mid-1950s. Originally, fire training was conducted on the ground surface within a bermed area. In 1975, a lined burn pit was constructed and this pit was used until 1999. Conversion of the burn pit to a training area that employs clean-burning fuels with operational and engineering controls started August 2000. During the installation, POL contaminated soils were removed. The new training facility was completed in Fiscal Year 2001.

An RI field investigation for Site 54 commenced in February 1995 and continued through May 1995. Soil borings were completed to assess the suspected impact of burn pit operations and were utilized for the installation of monitoring wells. SVOCs were identified in both surface and subsurface soil samples from the southern and southwestern portions of the study area. Positive detections of organic compounds were limited to portions of the study area immediately adjacent to the burn pit or UST and extending southwest of the burn pit. The presence of volatile and semivolatile compounds in soil and groundwater samples obtained from this portion of the study area is consistent with former site operations.

Site 54 was placed in the monitoring program in 1998. Groundwater samples have been collected at this site on a quarterly basis since that time. Sampling was temporarily suspended in Fiscal Year 2001 following the soil removal action. Based on the groundwater data collected after the removal, it was determined that VOCs and SVOCs no longer pose an impact to the groundwater. Subsequently, monitoring for VOCs and SVOCs was discontinued in Fiscal Year 2002.

As noted, the Final ROD is pending, but it is anticipated that no additional remedial action or monitoring will be required for Site 54. LUCs will be implemented through the RD document (anticipated in Fiscal Year 2005) for intrusive activities and land use restrictions within the former soil impacted area since the soils were cleaned up to industrial land use criteria.

Site Chronology – Site 54

Event	Date
Fire training facility	mid-1950s to present
Fire training activities performed on the ground surface using JP-type fuel	mid-1950s to 1975
A concrete lined burn pit was constructed	1975 through 1999
IAS	1983
Confirmation Study	1984 through 1987
RI/FS	1995 to 1998
LTM	1998 to 2002
New training area constructed; old pit and contaminated soils removed	2000

2.7 Operable Unit No. 7 (Sites 1, 28, and 30)

The Final ROD for OU No. 7 was signed on May 16, 1996 (Baker, 1996a). The ROD for Sites 1 and 28 stipulated institutional controls and groundwater monitoring program. Monitoring at the sites began in July 1996, and the requirements for completing the monitoring programs were achieved in 2000 for Site 1 and in 2001 for Site 28. There were no remedial actions required in the ROD for Site 30, due to the absence of contamination.

2.7.1 Site 1 - French Creek Liquids Disposal Area

Site 1 is located approximately one mile east of the New River and is situated along both the north and south sides of cHugh Boulevard near the western edge of the Gun Park Area and Force Troops Complex. Site 1 had been used by several different mechanized, armored, and artillery units since the 1940s. Reportedly, liquid wastes generated from vehicle maintenance were routinely poured onto the ground surface. At times, holes were reportedly dug for waste acid disposal and then immediately backfilled. Thus, the disposal areas at Site 1 are suspected to contain POL and battery acid. The total extent of both the northern and southern disposal areas is estimated to be between seven and eight acres. The quantity of POL waste disposed at the areas is estimated to be between 5,000 and 20,000 gallons; the quantity of battery acid waste is estimated to be between 1,000 and 10,000 gallons. Site 1 continues to serve as a vehicle and equipment maintenance/staging area.

In 1994, an RI was conducted at Site 1. VOCs were not found in surface soils, but were detected in limited subsurface soil samples. Positive detections of VOCs in groundwater were limited to the northern portion of the study area. TCE was detected in samples obtained from the shallow aquifer. Vinyl chloride was also detected at concentrations that exceeded the state and federal drinking water standards.

As a result of the RI findings, institutional controls and groundwater monitoring were required for Site 1. These land and aquifer use controls were implemented through a LUC that was completed during Fiscal Year 2001 and updated in Fiscal Year 2002. Monitoring was discontinued in January 2001 when site wide groundwater concentrations fell below the remedial action goals. A Final OU Closeout Report was completed in Fiscal Year 2002 to document the completion of the remedial action (monitoring).

Site Chronology – Site 1

Event	Date
Various artillery units reportedly disposing of liquid wastes on ground surface	1940s
IAS	1983
Confirmation Study	1984 through 1987
Soil Assessment	1991
Groundwater Sampling Study	1993
RI/FS	1995
ROD	1996
LTM	1996 to 2001
OU No. 7 Final Close Out Report	2002
LUCs prepared	2001 (updated July 2002)
Plat maps prepared	2001

2.7.2 Site 28 - Hadnot Point Burn Dump

Site 28 is located along the eastern bank of the New River, south of the HPIA on the Mainside portion of MCB, Camp Lejeune. Site 28 is surrounded by the former Hadnot Point STP to the north, wooded and marshy areas to the east and south, and the New River to the west. Cogdels Creek flows into the New River at Site 28 and forms a natural divide between the eastern and western portions of the site.

A majority of the estimated 23 acres that constitute Site 28 are used for recreation and physical training exercises. Site 28 operated from 1946 to 1971 as a burn area for a variety of solid wastes generated on the Base. Reportedly, industrial waste, trash, oil-based paint, and construction debris were burned then covered with soil. In 1971, the burn dump ceased operations, and was graded and seeded with grass. The total volume of fill within the dump is estimated to be between 185,000 and 375,000 cubic yards. This estimate was based upon a surface area of 23 acres and a depth ranging from five to ten feet.

In 1994, an RI was conducted at Site 28. VOCs were found in the surface soil and subsurface soil at very low concentrations. Based upon their wide dispersion, infrequent detection, and low concentration, VOCs in soils are not a significant problem resulting from previous disposal practices.

Detections of SVOCs are related to past disposal practices. Several SVOCs were identified in both surface and subsurface soil samples, primarily from the western disposal area. Inorganics were

detected in both surface and subsurface soil samples from the western portion of the study area at concentrations greater than one order of magnitude above Base-specific background levels. Inorganics were the most prevalent and widely distributed contaminants in groundwater at Site 28 and were found distributed throughout the site. Concentrations of inorganics, in samples obtained during both sampling rounds, were generally higher in shallow groundwater samples than in samples collected from the deeper aquifer.

As a result of the RI findings, institutional controls were required for Site 28. A groundwater, surface water, and sediment monitoring program for metals was established in July 1996. Based upon findings of the monitoring program, the number of wells sampled were modified since 1996 from 13 wells to four wells in 1998. In 1999, the number of wells in the monitoring program was reduced again to one.

Additional actions were taken in Fiscal Year 2001 when one new shallow well was installed in the area of the highest lead concentrations in soil found during the RI. Results from soil and groundwater sampling indicated lead concentrations in both media, but below the levels found during the RI. The lead was determined to be at naturally high levels due to natural soil conditions. This new well was added to the monitoring program in Fiscal Year 2001. A Final OU Closeout Report was completed in Fiscal Year 2002 to document the completion of the remedial action (monitoring). The final LTM sampling event was completed in the fourth quarter of Fiscal Year 2001.

Land and aquifer use controls are included in the selected remedy as institutional controls. These were implemented through a LUC, which was completed during Fiscal Year 2001 and updated in Fiscal Year 2002.

Site Chronology – Site 28

Event	Date
Burn area for various soil wastes	1946 to 1971
IAS	1983
Confirmation Study	1984 through 1987
Additional sampling activities	1993
RI/FS	1995
Confirmatory soil sampling	1995
ROD	1996
LTM	1996 to 2001
Additional delineation	2001
OU No. 7 Final Close Out Report	2002
LUCs prepared	2001 (updated July 2002)
Plat maps prepared	2001

2.7.3 Site 30 - Sneads Ferry Road Fuel Tank Sludge Area

Site 30 is situated along a tank trail that intersects Sneads Ferry Road from the west, approximately 1 mile south of the intersection with Marines Road, and roughly 4-1/2 miles south of the HPIA. The majority of the Site 30 area is wooded, containing trees of less than three inches in diameter and a dense understory. Site 30 was reportedly used by a private contractor as a cleaning area for emptied fuel storage tanks from other locations. The tanks were used to store leaded gasoline. Since fuel residuals remaining in the emptied tanks were reportedly washed out at Site 30, the disposal area is suspected to contain fuel sludge and wastewater from the tank cleaning process.

In 1994, an RI was conducted at Site 30. A very limited number of VOCs were detected between surface and subsurface soil samples. No significant detections of any other potentially hazardous compounds were noted during the RI. Accordingly, no additional remedial actions were recommended and a no action ROD was prepared for Site 30.

Site Chronology – Site 30

Event	Date
Cleaning area for emptied fuel storage tanks	Unknown
IAS	1983
Confirmation Study	1984 through 1987
Additional groundwater sampling	1993
RI	1994 to 1995
Confirmatory soil sampling	1995
ROD	1996

2.8 Operable Unit No. 8 (Site 16)

The Final ROD for OU No. 8 was signed on September 30, 1996 (Baker, 1996b). Although several contaminants were detected among the various environmental samples, the levels were not high enough to warrant further action; however, institutional controls were established. Due to the absence of contamination at Site 16, there were no remedial actions required.

2.8.1 Site 16 - Former Montford Point Burn Dump

Site 16 is located southwest of the intersection of Montford Landing Road and Wilson Drive in the Montford Point area of Camp Lejeune. The study area is approximately 4 acres in size and is bordered by wooded areas. Northeast Creek is approximately 400 feet southeast from the boundary of the burn dump. Limited information is available concerning the operational history of the burn dump. Trash from the surrounding housing area and buildings is suspected to have been burned and then covered with soil at Site 16. Records indicate that small amounts of waste oils were also disposed of at this site. Currently, the study area is semi-fenced and vacant.

An RI/FS at Site 16 was initiated in June 1994 and was completed in November 1994. A second round of groundwater samples were collected in February 1995. A confirmatory soil investigation was conducted in December 1995. Several pesticide contaminants were detected among soil and sediment samples obtained from the site. The pesticide levels detected at Site 16 were similar to levels detected at other areas within MCB, Camp Lejeune. Surface soil contamination also included PCBs. The detections of Aroclor 1254 and 1260 were from sampling locations across the site. PCBs were not found in the groundwater indicating that vertical migration to the water table had not occurred. Semivolatile compounds were infrequently encountered at low levels in the surface soil. Subsurface soil was relatively free of semivolatile contamination. The source of the semivolatile compounds is believed to be historical open burning. Benzene and ethylbenzene were detected in one groundwater sample collected during the first round of groundwater sampling. Volatile contaminants were absent in all groundwater samples collected as part of the second round.

Although several contaminants were detected among the various samples of environmental media, the levels were not high enough to warrant further action; however, institutional controls were established. The institutional controls at Site 16 include land and aquifer use controls, which were implemented through a LUC completed in Fiscal Year 2001 and updated in Fiscal Year 2002. No additional remedial actions are planned for Site 16.

Site Chronology – Site 16

Event	Date
Burn dump	Suspected dates - 1958 to 1972
RI	1996
ROD	1996
LUCs prepared	2001 (updated July 2002)
Plat maps prepared	2001

2.9 Operable Unit No. 9 (Site 65)

A Final ROD was signed for OU No. 9 on September 30, 2001 (Baker, 2001a). There were no remedial actions required in the ROD for Site 65, due to the absence of contamination.

2.9.1 Site 65 - Engineer Area Dump

Site 65 is located in the Courthouse Bay area of MCB, Camp Lejeune and is approximately five acres in size. Two separate disposal areas have been reported at Site 65, a battery acid disposal area and a liquid disposal area. The types of liquids that have been disposed are reported to have been comprised of POL. In addition, the dump was used to burn construction debris. The dump was in operation from before 1958 until 1972.

An RI was conducted at Site 65 in 1995. Findings from the RI indicate that there were no releases of hazardous substances from the waste disposal areas that would result in a risk to human health or the environment.

In early 2001, several discarded containers were discovered near Site 65. The containers were heavily corroded and no materials were noted in the containers. Groundwater, soil, and surface water and sediment (from a nearby creek) were collected in April 2001 to determine if surrounding media had been impacted from potential releases. The data indicated that the various media had not been impacted from the containers.

The Final PRAP and ROD were completed in Fiscal Year 2001. No additional remedial actions are planned for Site 65.

Site Chronology – Site 65

Event	Date
Disposal operations	1958 through 1972
IAS	1983
SI	1991
RI	1997
Discarded containers found and subsequent field investigation completed	2001
ROD	2001

2.10 Operable Unit No. 10 (Site 35)

IRODs were signed on September 15, 1994 and September 22, 1995 for soil and the shallow groundwater, respectively (Baker, 1994c and 1995n). A removal action for hydrocarbon contaminated soils was performed from September 1995 to May 1996 as part of the soil IROD. An in situ air sparge (IAS) trench was installed in February 1998 as part of the groundwater IROD and is currently operating.

2.10.1 Site 35 - Camp Geiger Area Fuel Farm

Site 35 is located immediately north of the intersection of G and Fourth Streets, approximately 400 feet southwest of Brinson Creek. The Fuel Farm consisted of five 15,000-gallon ASTs and associated underground distribution lines, a pumphouse, a fueling pad, a distribution island, and an oil/water separator. The ASTs were erected in 1945 as part of the original Camp Geiger construction. The Fuel Farm was active until it was decommissioned in the spring of 1995 to make way for the construction of a highway. During the active life of the Fuel Farm several releases of fuel occurred. During 1957 and 58 approximately 1,000-gallons of fuel were released. To control the release, interceptor trenches were dug and the fuel was ignited. There is also evidence of a fuel release from an abandoned underground distribution line that supplied No. 6 fuel oil to a UST that fueled a boiler at the Mess Hall Heating Plant, located adjacent to "D" Street between Third and Fourth Streets.

During 1993 and 1994, an Interim RI and comprehensive RI were conducted at Site 35. The Interim RI identified elevated levels of petroleum hydrocarbon contamination in soils at three locations adjacent to the former fuel farm. The comprehensive RI began in March 1994 and was completed in July 1995. The comprehensive RI identified multiple plumes of fuel- and solvent-related groundwater

contamination in the surficial aquifer. An Interim FS and ROD were prepared that focused on fuel-impacted soil at the site. A soil removal was conducted in 1995 and completed in the spring of 1996.

An IROD was signed in Fiscal Year 1995 for the shallow groundwater. As noted above, the selected remedy addressed in the IROD was IAS trench. This remedy was intended to expedite the reduction of organic contaminants in the surficial aquifer.

Due to unfavorable site conditions, lack of access, and a lack of BTEX contamination in groundwater east of the proposed highway, it was recommended that an IAS trench (approximately 100 feet in length) be constructed along the western edge of the proposed right-of-way. It was further recommended that the IAS system be tested before full-scale implementation. The pilot air sparging system is currently operating and is maintained by the Remedial Action Contractor (RAC).

A Draft NAE Report was prepared during Fiscal Year 1999. A Focused NAE Study for the wetlands at Site 35 was conducted in Fiscal Years 2002 and 2003 based on the recommendations of the draft report. Additional data to support the focused NAE study was also collected in October 2002 as part of the Site 35 Hot Spot Investigation. The purpose of the NAE study was to evaluate the site conditions to determine if MNA could serve as a potential remedial alternative for groundwater. The Final NAE Study Report was submitted in Fiscal Year 2003 and concluded that conditions were generally favorable to reduce the contaminant mass in groundwater; however, complete reduction may not be possible within a regulatory time frame due to the continued release of VOCs from the primary TCE "hot spot".

A pilot study was initiated in the 2nd quarter of Fiscal Year 2004 on the main TCE "hot spot". The "hot spot" area was further characterized in early Fiscal Year 2003 to support the pilot study. A Technology Evaluation Report and Treatability Study Work Plan, completed in Fiscal Year 2004, recommended injections of modified Fenton's Reagent and permanganate for the study. The pilot study and monitoring are planned to be completed in Fiscal Year 2005, and the Pilot Study Evaluation Report will be completed in Fiscal Year 2006.

Site 35 was incorporated into the monitoring program in October 1998. Semiannual monitoring, which includes groundwater and surface water from Brinson Creek, will continue in Fiscal Year 2004.

Completion of the FS, PRAP, ROD, and RD are anticipated in Fiscal Years 2005 through 2007.

Site Chronology – Site 35

Event	Date
Fuel farm operations	1945 to 1995
IAS	1983
Confirmation Study	1984 through 1987
UST Site Characterization	1992
Interim RI and comprehensive RI	1993 through 1994
Fuel farm and associated structures dismantled	1995
Soil removal	1995 to 1996
IRODs – Soil and Groundwater	1995
Pilot scale IAS trench	1998 to present
Supplemental Groundwater Investigation	1997
LTM	1998 to present
Initial NAE Study Report	1999
Hot Spot Characterization Study	2002
Final NAE Study Report	2003
Technology Evaluation Report for Pilot Study	2003
Groundwater Pilot Study	2004 to present

2.11 Operable Unit No. 11 (Sites 7 and 80)

The Final ROD for OU No. 11 was signed on August 21, 1997 (Baker, 1997a). There were no remedial actions required in the ROD for Site 7, due to the absence of contamination. The ROD for Site 80 stipulated completing a TCRA for the pesticide contaminated soils, which was initiated in 1996. After completion of the TCRA, a No Action Alternative was presented in the ROD and approved. No additional remedial action or monitoring is planned for Site 80.

2.11.1 Site 7 - Tarawa Terrace Dump

Site 7 is approximately 5 acres in size and is situated just south of the Tarawa Terrace community center between Tarawa Boulevard and Northeast Creek. Site 7 is a former dump that was used during the construction of the Base housing located in Tarawa Terrace. Precise years of operation are unknown, but it has been reported that the dump was closed in 1972. Historical records do not indicate that hazardous materials were disposed at this facility; only construction debris, water treatment plant filter media, and household trash.

The RI field program at Site 7 was conducted in 1994 and consisted of a site survey; a soil investigation that included drilling and sampling; a groundwater investigation that included

monitoring well installation and sampling; a surface water and sediment investigation; a habitat evaluation; and an earthworm bioaccumulation study. The pesticides dieldrin, 4,4'-DDE, 4,4'-DDT, and 4,4'-DDD were the most prevalent pesticide contaminants among the soil and sediment samples. Semivolatile contamination was detected in the north and eastern portions of the study area. Metals were the most prevalent and widely distributed contaminants in the groundwater. None of the contaminants detected was considered to pose a threat to human health or the environment. Accordingly, no additional remedial actions are planned for Site 7.

Site Chronology – Site 7

Event	Date
Disposal operations	Closed in 1972
Pre-RI	1991
RI	1996
ROD	1997

2.11.2 Site 80 - Paradise Point Golf Course Maintenance Area

Site 80 is located northwest of Brewster Boulevard within the Paradise Point Golf Course, behind Building 1916. Information regarding past maintenance procedures is unknown; however, the facility is currently operating.

The initial phase of the RI field investigation commenced in October 1994 and continued through December 1994. A subsequent soil and groundwater investigation at Site 80 commenced in June 1995 and continued through July 1995. Based upon the results of the investigations, pesticides were the predominant contaminants at Site 80. Six of the eleven pesticides detected in soils at Site 80 were in 20 of the 55 samples analyzed.

Based on the risk assessment presented in the RI report, a TCRA was performed to remove soil contaminated with pesticides. The TCRA was completed during 1996. Remedial action levels were based upon Region III Risk-Based Concentrations (RBCs) for industrial workers, which resulted in a ten-fold increase in the action levels for dieldrin and aldrin, the drivers of the remedial effort. Approximately 988 tons of contaminated soils were excavated from Site 80.

After completion of the TCRA, a No Action Alternative was presented in the ROD, signed in August 1997. No additional remedial actions are planned for Site 80.

Site Chronology – Site 80

Event	Date
Golf maintenance	Unknown to present
Pre-RI	1991
RI	1996
TCRA	1996
ROD	1997

2.12 Operable Unit No. 12 (Site 3)

The Final ROD for OU No. 12 was signed on April 3, 1997 and was amended in Fiscal Year 1999. The Amended ROD was signed on June 20, 2000 (Baker, 2000a). The remedial action proposed in the Amended ROD recommended that the excavated soil be taken off-site for disposal at a permitted facility in lieu of on-site treatment. This action was completed in 2000. Groundwater monitoring was also stipulated in the Amended ROD.

2.12.1 Site 3 - Old Creosote Plant

Site 3 is located on the mainside portion of MCB, Camp Lejeune, approximately one mile north of Wallace Creek along Holcomb Boulevard. Site 3 encompasses approximately 5 acres, is generally flat, and is intersected by a dirt access road. Remnants of a former creosote plant, including the chimney, concrete pads, and train rails, are present in the southern portion of Site 3. The creosote plant reportedly operated from 1951 to 1952 to supply treated lumber during construction of the Camp Lejeune Railroad. The former sawmill, which supplied the cut timbers for creosote treatment, was reportedly located in the cleared area in the northern portion of Site 3.

The RI field investigation commenced in September 1994 and continued through December 1994. A follow-up phase of the RI field investigation was completed in June and July of 1995. Due to volatile and PAH contamination detected within the groundwater during the first round of sampling, additional monitoring wells were installed to further define the vertical and horizontal extent of contamination. Naphthalene was the only PAH constituent detected above applicable standards in the groundwater.

PAH constituents were also detected among soil samples obtained from the site. The highest concentrations of PAHs occurred in the central portion of the site, the former treatment area. Fuel constituents, such as ethylbenzene and xylene, were also detected in surface and subsurface soils at Site 3, primarily at the former treatment area in the central portion of the site.

Based on the findings of the RI/FS, the recommended alternative presented in the ROD included excavation of contaminated soil, on-site treatment of the soil, and groundwater monitoring. An Amended ROD was prepared and submitted for approval during the first quarter of Fiscal Year 1999. The Amended ROD proposed that the excavated soil be taken off-site for disposal at a permitted facility in lieu of on-site treatment; however, due to a change in the regulatory status of creosote contaminated soils, other remediation options were considered. These options include in situ solidification, monitored natural attenuation, and removal/on site treatment/off-site disposal.

The final remedy, which included removal and disposal of the PAH impacted soils, was selected and implemented in Fiscal Year 2000. The Final Amended ROD was signed on June 20, 2000. The Amended ROD also includes a LUC which implements aquifer and land use controls at Site 3. The LUC was updated in Fiscal Year 2002. Semiannual monitoring of groundwater at Site 3 will continue in Fiscal Year 2005.

Site Chronology – Site 3

Event	Date
Creosote plant	1951 to 1952
SI	1991
RI/FS	1996
ROD	1997
LTM	1998 to present
Non-TCRA	2000
Amended ROD	2000
LUCs prepared	2001 (updated July 2002)
Plat maps prepared	2001

2.13 Operable Unit No. 13 (Site 63)

The Final ROD for OU No. 13 was signed on April 3, 1997 (Baker, 1997b). The ROD for Site 63 stipulated no additional remedial action or monitoring is required; however, land use controls are being implemented to restrict aquifer usage.

2.13.1 Site 63 - Verona Loop Dump

Site 63 is comprised of approximately five acres and is located nearly two miles south of the MCAS, New River operations area. Site 63 is bordered to the south by Verona Loop Road, to the east by an unnamed tributary to Mill Run, and to the west by a gravel access road. Much of the site is heavily vegetated with dense understory and trees greater than three inches in diameter. Very little information is known regarding the history or occurrence of waste disposal practices at Site 63. The study area reportedly received wastes generated during training exercises. The type of materials generated during these exercises are described only as "bivouac" wastes. Additional information suggests that no hazardous wastes were disposed of at Site 63. The years during which disposal operations may have taken place are not known. Training exercises, maneuvers, and recreational hunting are frequently conducted in the area.

The RI field investigation of OU No. 13 was completed during November 1995. The RI field program at Site 63 consisted of a site survey, a soil investigation, a groundwater investigation, a surface water and sediment investigation, and a habitat evaluation. Positive detections of SVOCs, pesticides, and metals were observed in environmental samples obtained at Site 63. Pesticide concentrations were low (i.e., less than 0.1 milligrams per kilogram [mg/kg]) and primarily limited to within and adjacent to the suspected disposal portion of the study area. The presence of SVOCs and pesticides is most likely the result of former or ongoing activities at Site 63.

Based upon the findings presented in the RI, there are no threats to human health and the environment from the contamination at Site 63. No additional remedial action or monitoring is planned for Site 63. A LUC was recommended for intrusive activities and aquifer use and was implemented in Fiscal Year 2001 and updated in Fiscal Year 2002.

Site Chronology – Site 63

Event	Date
Disposal operations	Unknown
IAS	1983
SI	1991
RI	1996
ROD	1997
LUCs prepared	2001 (updated July 2002)
Plat maps prepared	2001

2.14 Operable Unit No. 14 (Site 69)

A Final Interim ROD was signed for OU No. 14 on June 29, 2000 (Baker, 2000b). The Interim ROD for Site 69 stipulates MNA as the interim remedy.

2.14.1 Site 69 - Rifle Range Chemical Dump

Site 69 is located approximately one-quarter mile west of the New River in the Rifle Range area of MCB, Camp Lejeune. The site includes approximately 14 acres and is situated in a topographically high area. The former disposal area slopes downward in all directions from the central portion of the study area. From 1950 to 1976, the area was used to dispose of chemical wastes including PCBs, solvents, pesticides, calcium hypochlorite, and drums of "gas" that possibly contained cyanide (CN) (i.e., tear gas) or other training agents. Based upon background information, chemical training agents may be buried at this site.

The RI/FS at Site 69 commenced in 1992 and, after a number of supplemental investigations, concluded in 1995. Results from the RI indicate that groundwater is contaminated with solvent constituents. The groundwater contamination is believed to be centered in the south-central portion of the site and has not migrated extensively from the disposal area. Surface soil has not been impacted by the former disposal activities; however, it is believed that the top two feet of soil may be cover material that was placed over the debris. No intrusive investigations were conducted due to the potential for encountering chemical agents. Geophysical investigations have indicated buried metallic objects near the groundwater source area. It is likely that the buried material consists of drums or canisters that contain solvents. Surface water and sediment collected from the New River, Everett

Creek, and an unnamed tributary north of the site have not been impacted by the former disposal operations.

A treatability study was initiated in March 1996 to assess the effectiveness of an innovative groundwater treatment technology called in-well aeration. After two years of operation and testing, in-well aeration was determined to be ineffective at reducing the number and concentration of contaminants in the groundwater.

During Fiscal Year 2000, a Final Interim ROD that identifies MNA and institutional controls as the most feasible treatment alternatives for the groundwater aquifer was signed. The Interim ROD will be in effect until it is feasible to remove the CWM from the site, which will be done under the supervision of the Army Corps of Engineers. Institutional controls include aquifer and land use controls that will be implemented through a LUC, which was updated in Fiscal Year 2002. Groundwater monitoring will continue on a semiannual basis in Fiscal Year 2005. A Confirmation Study will be completed in Fiscal Year 2006 to identify any potential data gaps prior to completion of the ROD.

Completion of the PRAP, ROD, and RD are anticipated in Fiscal Years 2006 through 2007.

Site Chronology – Site 69

Event	Date
Disposal operations	1950 through 1976
IAS	1983
Confirmation Study	1984 through 1987
RI	1992 through 1999
In-Well Aeration Pilot Study	1997 through 1998
LTM	1998 to present
Final Interim ROD	2000
LUCs prepared	2001 (updated July 2002)
Plat maps prepared	2001

2.15 Operable Unit No. 15 (Site 88)

A Focused RI was completed for Operable Unit No. 15 (Site 88) on May 15, 1998 (Baker, 1998a). An Amended RI report will be completed in Fiscal Year 2006.

2.15.1 Site 88 - Base Dry Cleaners

Site 88 is located at the Base dry cleaners (Building 25) within a densely populated area of MCB, Camp Lejeune. Barracks, office buildings, and other occupied structures are located adjacent to Building 25. The USTs were installed in the 1940s and were used to store varsol, an early dry cleaning chemical. PCE replaced Varsol in the 1970's and was stored in an AST. In the mid-1980's the AST was taken out of service. The USTs were removed between November 1995 and January 1996.

A Focused RI was completed that identified the limits of soil and groundwater contamination at the site. In general, contaminated soil appears to be concentrated beneath the building and the parking lot to the northwest near Building 25. Groundwater contamination extends to a depth 50 feet below ground surface and extends approximately 700 feet to the northwest. Isolated areas of free phase dense non-aqueous liquid (DNAPL) exist beneath Building 25 and areas immediately north of the building.

To address the DNAPL situation at Site 88, a partial free phase liquid recovery has been completed in addition to a pre-surfactant remediation characterization and delineation study. These studies have established the nature and extent of residual phase of DNAPL. Surfactant enhanced aquifer remediation (SEAR) was conducted to remove the residual phase DNAPL and some free phase DNAPL. This pilot program was completed in August 1999. The Final SEAR Report was issued January 25, 2000. Post SEAR monitoring was completed in Fiscal Year 2001.

In Fiscal Year 2001, several other interim remedial actions were also initiated. The Air Force started operations of the Reductive Anaerobic Bioremediation In-Situ Treatment Technology (RABITT) pilot scale test within the dissolved portion of the plume near monitoring wells 88-MW05 and 88-MW05IW. This pilot test was completed in Fiscal Year 2002. In addition, the RAC started

aggressive fluid vapor recovery (AFVR) activities at Site 88 by pumping free phase product monthly from six existing extraction wells. Free phase product recovery will continue in Fiscal Year 2005.

Site 88 was added to the monitoring program in April 1999. Semiannual groundwater monitoring was discontinued in the fourth quarter of Fiscal Year 2001 and a Pre-Amended RI sampling event was completed in the fourth quarter of Fiscal Year 2002. The Work Plan for the Amended RI was completed in Fiscal Year 2003, and the fieldwork started in Fiscal Year 2004 and is currently ongoing. The Amended RI Report and FS are anticipated to be completed in Fiscal Year 2006.

An EE/CA for the soil source removal action under Building 25 was completed Fiscal Year 2004, and provided recommendations for the technology and approach to be completed as part of source removal action. A public meeting for the EE/CA was held on June 1, 2004 to support the EE/CA. Shallow soil mixing with clay-zero valent iron and dual phase extraction were the recommended technologies in the EE/CA. The IRA is anticipated to start in the 4th quarter of Fiscal Year 2004 and will be completed in Fiscal Year 2005.

The PRAP, ROD, and RD will be completed in Fiscal Years 2006 through 2007.

Site Chronology – Site 88

Event	Date
USTs installed	1940s
USTs removed	1995 through 1996
Focused RI	1998
DNAPL Investigation	1998
SEAR Pilot Study	1999 through 2000
LTM	1999 to 2001
RABITT Pilot Study	2001
Pre-Amended RI sampling event	2002
AFVR	2001 to present
Amended RI Field Work	2003 to present
Building 25 EE/CA	2004
Public meeting for EE/CA	2004

2.16 Operable Unit No. 16 (Sites 89 and 93)

Operable Unit No. 16 consists of Site 89 (Former DRMO) and Site 93 (TC-942). Focused RIs were completed for both sites and the reports were issued as final on June 15, 1998 (Baker, 1998b). Both sites were included in the monitoring program in Fiscal Year 1999. A TCRA for contaminated soils was completed in Fiscal Year 2001 at Site 89 (IT, 2001). A pilot study at Site 89 for groundwater source removal treatment was completed in the 2nd quarter of Fiscal Year 2004. Moreover, an Amended RI was initiated at Site 89 in Fiscal Year 2003 and is ongoing.

2.16.1 Site 89 - (Former DRMO)

Due to the presence of chlorinated solvents detected during UST investigations, Site 89 has been further characterized by a Focused RI under the IR Program. The site is located near the intersection of G and 8th Streets in the Camp Geiger area of MCB, Camp Lejeune. A UST for waste oil was installed in 1983 and removed in 1993. UST investigations detected elevated levels of total petroleum hydrocarbon (TPH), oil and grease, and chlorinated solvents in soil and groundwater samples.

The Focused RI was conducted in two phases in 1996 and in 1997. Activities under this investigation included the installation of temporary and permanent monitoring wells with associated soil and groundwater sampling. In addition, surface water and sediment samples were collected from Edwards Creek, which borders the southern portion of the site. The Focused RI at Site 89 identified chlorinated solvent contamination of soil and groundwater. The majority of the groundwater contamination is located in the area of the former DRMO. The contaminant plume extends to approximately 50 feet below ground surface and extends approximately 1,200 feet east of the DRMO. In addition, solvents in the groundwater impacted Edwards Creek, which is located along the southern boundary of Site 89.

Additional investigation activities were conducted in June/July 1999 and in October 1999. Activities included the installation of permanent monitoring wells and associated groundwater sampling, the collection of soil samples, and the collection of surface water and sediment samples. These investigations verified that the extensive amounts of chlorinated solvents had impacted the immediate and surrounding areas of Site 89.

A follow up investigation was conducted in December 1999 to further delineate the extensive soil contamination in the southern portion of Site 89. Soil samples were collected from the southern portion of Site 89 both inside and outside the DRMO. This sampling event confirmed that extremely high levels of chlorinated solvents were impacting an extensive area within the southern portion of the site.

A TCRA was completed in Fiscal Year 2001 for the removal and treatment of vadose zone contaminants in the southern portion of the site. Low Temperature Thermal Desorption (LTTD) units were used to treat the contaminated soil and roughly, 32,000 tons were treated. In addition, an aeration system was installed in Edwards Creek to assist in the remediation of VOCs in the creek. This system is anticipated to be operational through Fiscal Year 2005.

The DNAPL that remains within the southern portion of Site 89 will be addressed through a follow up EE/CA and non-TCRA. The Phase I supplemental field investigation to support the EE/CA was completed in 3rd quarter of 2001 and the Phase II supplemental field investigation was completed in the 3rd quarter of Fiscal Year 2002. Operation of a pilot scale test to evaluate electrical resistance heating (ERH) was completed in the 3rd quarter of Fiscal Year 2004 on the eastern DNAPL source area as identified through the supplemental field investigations. Follow up sampling as part of the post treatment monitoring program will continue through the 3rd quarter of Fiscal Year 2005. Based on preliminary review of the data, a 99 percent reduction of contamination was observed in the treatment area.

Site 89 was added to the monitoring program in April 1999. Groundwater monitoring, which is conducted on a semiannual basis, was temporarily suspended in Fiscal Year 2001 due to the TCRA (only surface water sampling was performed). Sampling will continue in Fiscal Year 2005 in support of the pilot study and to provide ongoing monitoring of the groundwater and creek.

A site-wide RI/FS to address the northern, eastern, and southern (across Edwards Creek) portions of Site 89 was initiated in Fiscal Year 2004 and anticipated to be completed in Fiscal Year 2005. The PRAP, ROD, and RD will follow in Fiscal Years 2006 through 2007.

Site Chronology – Site 89

Event	Date
Waste oil UST installed	1983
Waste oil UST removed	1993
Focused RI	1996 through 1997
Additional investigations	1999 through 2000
LTM	1999 to present
Action Memorandum for TCRA	2001
TCRA for soil	2001
Phase I supplemental field investigation to support the EE/CA	2001
Phase II supplemental field investigation to support the EE/CA	2002
ERH Pilot Study	2003 to present
Site 89 Amended RI	2003 to present

2.16.2 Site 93 - (TC-942)

Site 93 is located northwest of the intersection of "E" and 10th Streets at Camp Geiger. The site consisted of one UST that was used to store used oil. The UST was removed in December 1993. Subsequent investigations detected chlorinated solvents and oil and grease compounds at the site. In addition, cadmium and lead were detected at concentrations exceeding state groundwater standards.

The remedial investigation identified shallow groundwater contamination in the area near the former UST. The impact to the groundwater at Site 93 is not as severe as what was discovered at Site 89. The depth, concentration, and the aerial extent of contamination are much less at Site 93. Because of the significant contamination at Site 89, the completion of the evaluation of Site 93 will be done separately.

In January 2002, a supplemental investigation was completed. The investigation included the installation of Geoprobe® borings and four shallow monitoring wells. A letter report documenting the field program and results was completed in the second quarter of Fiscal Year 2002. The FS will be completed during Fiscal Year 2005. The PRAP, ROD, and RD will follow in Fiscal Year 2006 through 2007.

Site 93 was added to the monitoring program in April 1999. Groundwater monitoring will continue in Fiscal Year 2005.

Site Chronology – Site 93

Event	Date
UST installed	Unknown
UST removed	1993
Focused RI	1996 to 1997
LTM	1999 to present
Supplemental investigation	2002
Technology Evaluation for Groundwater Pilot Study	2003 to present

2.17 Operable Unit No. 17 (Sites 90, 91, and 92)

The Final ROD was signed for OU 17 on September 30, 2001 (Baker, 2001). There were no remedial actions required in the ROD for Sites 90, 91, and 92, due to the absence of contamination.

Operable Unit No. 17 is located in the southeast portion of MCB, Camp Lejeune in the Courthouse Bay Complex. Sites 90, 91, and 92 are all former UST program sites that have been placed on the IR Program list because contaminants not typically related to petroleum UST sites were detected. Each of the sites was investigated under the IR Program through a Focused RI completed in April 1997. As a result of the findings of the Focused RI, additional sampling was completed in September 1999. The Final Focused RI was submitted in Fiscal Year 2000, and a "no further action" Final ROD was signed in Fiscal Year 2001.

2.17.1 Site 90 - (BB-9)

Site 90 contained three USTs used for heating oil. These tanks were removed in March 1993. Subsequent investigations confirmed the presence of soil and groundwater contamination. The Focused RI field activities detected toluene in the soil samples. Groundwater samples were collected from existing and newly installed temporary monitoring wells. The laboratory analysis of these samples only detected chloroform, which is not suspected to be a site related compound.

Additional groundwater samples were collected from permanent monitoring wells to confirm the presence or absence of chloroform. A Supplemental Groundwater Report was issued and commented on by all reviewing parties. The comments were incorporated into the Final Focused RI Report, which was completed in Fiscal Year 2001.

Three temporary wells were installed around a monitoring well that had detectable concentrations of TCE during the Supplemental Groundwater Study. These wells were installed to delineate the possible TCE plume. Samples from the three temporary wells did not contain TCE and, therefore, no further actions were required.

Site Chronology – Site 90

Event	Date
Three heating oil USTs installed	Unknown
Three heating oil USTs removed	1993
Final Focused RI	2000
Supplemental Groundwater Report	2001
ROD	2001

2.17.2 Site 91 - (BB-51)

Site 91 contained one UST that was removed in August 1992. At the time of the UST closure, TPH contamination was detected in the soil samples. The groundwater samples collected during the Focused RI detected PCE; however, the concentrations were below state and federal standards. Additional groundwater samples were collected from permanent monitoring wells to confirm the presence or absence of suspected non-site related compounds. A supplemental groundwater report was issued and commented on by all reviewing parties. The comments were incorporated into the Final Focused RI Report.

Site 91 was placed into the monitoring program in July 2000. Site wide groundwater monitoring was completed in Fiscal Year 2001. Monitoring of two wells for chloroform was completed in Fiscal Year 2002.

Site Chronology – Site 91

Event	Date
Two waste oil USTs installed	Unknown
Two waste oil USTs removed	1992
Final Focused RI	2000
LTM	2000 through 2002
ROD	2001

2.17.3 Site 92 - (BB-46)

Site 92 contained one UST that was installed in 1980 and used to store gasoline. The tank was deactivated in 1989 and removed in January 1994. A subsequent site investigation identified the presence of chlorinated hydrocarbons in the groundwater. Soil and groundwater samples were collected from existing and newly installed temporary monitoring wells as part of the Focused RI. There were no volatile organic compounds detected in the soil samples. Only chloroform was detected in the groundwater samples.

Site 92 was placed into the monitoring program in July 2000. Groundwater monitoring was completed in Fiscal Year 2001.

Site Chronology – Site 92

Event	Date
UST installed	Unknown
UST removed	1993
Focused RI	1996 through 1997
LTM	1999 to 2001
ROD	2001

2.18 Operable Unit No. 18 (Site 94)

Investigations and ongoing remedial actions at the site have been performed under the UST Program. A RI for Site 94 was initiated in Fiscal Year 2004.

2.18.1 Site 94 - PCX Service Station

Site 94 is located within the HPIA. Four gasoline USTs were reportedly installed during the 1950s northeast of Building 1613. The tanks supplied various grades of gasoline to the service station. All of the USTs were removed on January 13, 1995. Hydrocarbon contamination of the subsurface soil was confirmed at the site during the UST removal. Further investigations at the site have identified free phase hydrocarbons and chlorinated solvent related contaminants.

Dissolved purgeable aromatic constituents were identified and delineated in the area of the former UST basin and the free product plume areas. Dissolved purgeable halocarbon compounds were identified at concentrations exceeding North Carolina groundwater standards in three isolated areas, suggesting multiple sources. In addition, the vertical extent of purgeable halocarbons is at least 50 feet below ground surface. The extent of the chlorinated hydrocarbon plume is not defined. A final schedule for future actions at the site has not been established.

In September 2000, an additional groundwater investigation was conducted by OHM to evaluate groundwater conditions in an area of the site where monitoring wells had not been installed. Three monitoring wells were installed in the shallow zone and were sampled along with 18 existing monitoring wells at the site. The groundwater samples were analyzed for VOCs (Methods 602 and selected wells for 601) and PAHs (Method 610). The results indicated that six monitoring wells had VOC (BTEX and MTBE) concentrations that exceeded NCAC 2L Standards and two wells had PAH concentrations in excess of the standards.

CH2MHILL conducted a baseline groundwater sampling event in September 2003 to obtain current groundwater quality data. All 25 existing monitoring wells (22 monitoring wells from Site 94 and 3 monitoring wells associated with Site 78) were gauged and sampled for VOCs (EPA Method 8260B). TCE was detected in the three wells (UST1613-MW13, -MW14, and -MW15) screened within the intermediate aquifer above the NC 2L standard; the concentrations ranged from 21 to 54 µg/L. TCE, methylene chloride, and acetone were detected in shallow wells; only acetone was detected above the NC 2L standards in one well. This data was collected to assist in developing the Phase I Sample Strategy approach and has resulted in a focus on the intermediate and deep aquifer zones.

A Phase I RI started in the 4th quarter of Fiscal Year 2004 to further evaluate the groundwater contamination near Site 94. A Phase II investigation may follow pending the results of the Phase I SI.

The RI and FS Reports are anticipated to be completed in Fiscal Years 2005 through 2006. The PRAP, ROD, and RD will follow in FY 2006.

Site Chronology – Site 94

Event	Date
USTs installed	1950s
USTs/contaminated soil removed	1995
UST characterization	1996
Remedial actions under UST Program	1998 to present
Additional soil assessment	2000
Additional groundwater investigation	2000
SI baseline groundwater sampling	2003
Phase I SI Work Plans	2004
Phase I SI fieldwork	2004 to present

2.19 Operable Unit No. 19 (Site 84)

The remedies selected as detailed in the Final PRAP were presented at the public meeting held on June 18, 2002. Due to the national debate between the USEPA and DoD regarding enforcement issues of the LUCs, completion of the Final ROD was temporarily delayed. Accordingly, an Action Memorandum was also presented at the public meeting for completing an interim removal action as an alternative plan to completing the ROD remedial actions. An EE/CA was completed in early Fiscal Year 2003 as part of the interim removal response action. The Final Action Memorandum was also signed in early Fiscal Year 2003. The Phase I response action, which included the removal of impacted soils and the building foundation, was also completed in Fiscal Year 2003. The Phase II response action was completed in the 4th quarter of Fiscal Year 2004.

2.19.1 Site 84 - Building 45 Area

Site 84, including the former powerhouse, is located approximately 200 yards south of Highway 24 one mile west of the main gate. The study area lies east of Northeast Creek. The site area is mostly wooded and vegetated. There is a small lagoon, possibly manmade, hidden by trees near the center of the site. The lagoon is roughly circular in shape with a diameter of approximately 50 feet. There are no direct access roads and access to the site is restricted by locked gates. The site is relatively flat with some minor surface mounds in the wooded areas. Overland surface water drainage is west in the direction of Northeast Creek.

The site includes a former electrical powerhouse. Transformers reportedly containing PCBs were known to have been used and possibly stored at the powerhouse. A transformer was discovered near the wooded area, east of the powerhouse. Additional transformers (approximately 20) potentially containing PCB dielectric oil were discovered near the woods, east of the powerhouse. Maintenance personnel at Building 45 have indicated that additional transformers may still be buried in areas near the lagoon. Public works was reported to have performed minor excavations in the area and did not discover any waste materials.

Baker conducted soil, groundwater, surface water and sediment sampling activities in October 1995 as part of a SI. Additional sampling was performed in March 1998. Samples were analyzed for target compound list (TCL) PCBs only. From the results of the sampling performed at the site, it is obvious that the site has been adversely impacted by PCB contamination. PCBs have been detected at levels above 500 parts per billion (ppb) in soil collected from around the lagoon, and in surface water and sediment (above 1,000 ppb) collected from within the lagoon. A Pre-RI Screening Study was conducted in 1998 to initially characterize the site.

An EE/CA was prepared on January 15, 1999 to address the impacted soils and lagoon area. Based on delineation sampling that was conducted for the EE/CA, it was concluded that the extent of the contamination warranted an RI/FS. Two USTs have been removed from the site under the UST Program and have been followed up with soil vapor extraction/air sparging treatment.

Building 45 was demolished (except for the basement) in August/September 1999. Baker conducted concrete sampling and surface water sampling at Building 45 in August 1999. Additional field

activities in Fiscal Year 2000 included fencing and engineering controls to prevent intrusion into the basement.

The RI field investigation was completed in August 2001. The findings from the RI field investigation concluded that soils around former Building 45 and limited areas west of the building are impacted by organic compounds (primarily PCBs, pesticides, and PAHs) and metals. Limited groundwater contamination is present in the surficial aquifer, mostly from benzene, pesticides, and metals. Sediments in the lagoon as detected during the Pre-RI Investigation are also impacted, primarily from PCBs. The Final RI/FS documents were completed during Fiscal Year 2002.

The Phase I response action based on the recommendations presented in the RI/FS, was completed at former Building 45 to remove the remaining building foundation and impacted soils completed in Fiscal Year 2003. The Phase II interim removal response action was completed in Fiscal Year 2004 and the Closeout Report will be completed in 2005. A Site Evaluation Study will be completed in Fiscal Years 2005 and 2006. The ROD and RD will follow in Fiscal Years 2006 through 2007.

Site Chronology – Site 84

Event	Date
Electrical transformers stored in powerhouse	unknown
Building 45 maintenance facility	1965 to early 1990s
Phase I Site Screening sampling	1995
Additional Site Screening sampling	1998
Pre-RI Study	1998
Preliminary EE/CA	1999
Building 45 demolished (basement remained)	1999
Concrete foundation and surface water sampling	1999
RI	2001
Final PRAP, EE/CA and Action Memorandum	2002
Removal of Building 45 foundation and surrounding soils (Phase I IRA)	2002
Phase I IRA Closeout Report	2003
Phase II IRA fieldwork	2004

2.20 Operable Unit No. 20 (Site 86)

2.20.1 Site 86 - Tank Area AS419-AS421

Site 86 is located on the southwest corner of the Foster and Campbell Street intersection, within the operations area of MCAS New River. The site is comprised of a lawn area surrounded by buildings, asphalt roads, and parking lots. Site 86 served as a storage area for petroleum products from 1954 to 1988. In 1954, three 25,000-gallon ASTs were installed within an earthen berm. The three tanks were reportedly used for No. 6 fuel oil storage until 1979. From 1979 to 1988, the tanks were used for temporary storage of waste oil. The three tanks were emptied in 1988 and were removed in 1992. Today, the former location of the tanks is grass-covered and only a very slight depression remains.

The initial RI field investigation at Site 86 commenced in February 1995 and continued through May 1995. Volatile and semivolatile organic compounds were detected in both surface and subsurface soil samples. The majority of SVOCs detected in soil samples were PAH compounds. Based upon the initial results from the RI, additional wells were installed at Site 86 in 1997 and 1998. The groundwater monitoring wells were installed in locations to better define the limits of the identified plumes and to determine VOC contaminant migration.

Site 86 was added to the monitoring program in 1998. From 1998 through 2000, groundwater samples were collected on a quarterly basis, but have been reduced to annual monitoring in 2001. In June 2000 it was recommended that Site 86 be further evaluated based on the increasing levels of TCE, as noted during monitoring, in a downgradient intermediate well. The data also suggested that the TCE plume may be migrating as indicated by several downgradient wells. Subsequently, it was decided at the July 2000 IR Partnering Meeting that Site 86 would be permanently removed from OU No. 6 and a new OU, No. 20, would be created for this site.

Fieldwork associated with the Amended RI was completed in two phases; Phase I was completed in the fourth quarter of Fiscal Year 2001 and Phase II was completed the second quarter of Fiscal Year 2002. The findings from the Amended RI field investigation concluded that the primary TCE plume is located at a depth of 40 to 45 feet bgs. The plume extends from the boundary of Site 86 to approximately 1,700 feet downgradient. The Amended RI Report was completed in Fiscal Year 2003.

A pilot study is planned for Fiscal Year 2005 for the main TCE groundwater plume at the site. A Technology Evaluation Report and Treatability Study Work Plan were completed in Fiscal Year 2004 and recommend injection of ozone through a horizontal well for the pilot test. The field pilot study was initiated in the 2nd quarter of Fiscal Year 2005. A Pilot Test Study Report will be prepared following completion of the test, which is anticipated in Fiscal Year 2006.

Completion of the FS, PRAP, ROD, and RD are anticipated in Fiscal Years 2006 through 2007.

Site Chronology – Site 86

Event	Date
Storage area for petroleum products	1954 to 1988
Three 25,000 gallon waste oil USTs emptied	1988
Three 25,000 gallon waste oil USTs removed	1992
Preliminary Site Characterization	1992
Initial RI/FS	1995 through 1998
LTM	1998 to present
Amended RI	2001 through 2003
Technology Evaluation for Groundwater Pilot Study	2004

2.21 Operable Unit No. 21 (Site 73)

2.21.1 Site 73 - Courthouse Bay Liquids Disposal Area

Site 73 is located within an active amphibious vehicle maintenance facility located along the northwest shore of Courthouse Bay. Available information indicates that disposal activities occurred within a 13-acre area from 1946 until 1977. An estimated 400,000 gallons of waste oil were disposed of in this area. The waste oil was generated during routine vehicle maintenance. The oil drained directly on the ground surface. In addition, approximately 20,000 gallons of waste battery acid were reportedly disposed of in this area. Waste battery acid was poured into shallow hand-shoveled holes that were backfilled after disposal.

An RI was conducted at Site 73 in 1995. Findings from the RI indicated the presence of VOCs among a select number of shallow and deep groundwater samples scattered across the study area. A follow-up Phase II RI was conducted in the spring of 1996 to further delineate the extent of groundwater contamination.

An initial (Phase I) NAE field investigation at Site 73 was completed and a Draft NAE Report was prepared in the second quarter of Fiscal Year 1999. A Phase II Field Investigation was completed in May 2001 and provided additional data on plume characterization and natural attenuation conditions.

The Final NAE Report was completed in the second quarter of Fiscal Year 2002. Although natural attenuation of the VOCs in groundwater was demonstrated to be a viable treatment option, the time frame to reach the clean up objectives was determined to be prohibitive. Semiannual MNA sampling, however, will continue in Fiscal Year 2005 as part of the Post-RI sampling program.

Air sparging points were employed as an interim measure to address an area of concentrated vinyl chloride near the bulkhead area. Air was injected into 29 well points for a four month period from January through April 2002. Data from the treatment area indicated that the air was not effectively moving through the shallow formation due to the low permeable soil conditions. Accordingly, it was decided to discontinue the air injection.

The pilot study began in Fiscal Year 2004 for the main TCE groundwater plume at the site and will be completed in Fiscal Year 2005. A Technology Evaluation Report and Treatability Study Work Plan were completed in Fiscal Year 2003 and recommended hydrogen sparging through a horizontal well for the pilot test. A Pilot Test Study Report will be prepared following completion of the test, which is anticipated in Fiscal Year 2005. A Site Evaluation Study will be completed in Fiscal Years 2005 through 2006.

Completion of the FS, PRAP, ROD, and RD is anticipated in Fiscal Years 2006 through 2007.

Site Chronology – Site 73

Event	Date
Disposal operations (waste oil/battery acid)	1946 through 1977
IAS	1983
Confirmation Study	1990
UST Investigations	1991 through 1993
Preliminary Investigation	1994
RI	1995
Phase II RI	1996 through 1997
NAE Study	1999 through 2002
LTM	2000 to present
Supplemental NAE Field Investigation	2001
Air injection for vinyl chloride plume	2002
Technology Evaluation for Groundwater Pilot Study	2002
Groundwater Pilot Study	2003 through present

2.22 Pre-Remedial Investigation Sites

This section discusses sites that have been assessed through Pre-RIs. It is important to note that these Pre-RI sites are not required to adhere to the same reporting requirements as defined in the Camp Lejeune FFA for RI/FS sites. As noted in Section 1.4, Sites 12, 68, 75, 76, and 87 have been closed out and will not require further action.

2.22.1 Site 10 - Original Base Dump

Site 10 covers approximately 5 to 10 acres. It was operated prior to 1950 and was mainly used as a construction debris and burn dump. It is located to the west of Open Storage Lot 203 along Holcomb Boulevard. This site was added to the IR Program in 1994 when it was reported that two marines developed skin rashes after contacting a heavy oily material that may have been at the site. Project plan development for this site was completed in September 1997. This site was investigated through the completion of a SI in 1998. Results of the SI indicated minimal impact to soil, sediment, surface water, and groundwater at the site. Additional investigative activities were completed in Fiscal Year 2001 to further evaluate metals in groundwater. The Final SI Report was submitted in Fiscal Year 2001 and recommended no further actions at the site.

A Final No Further Action (NFA) Decision Document (DD) will be completed for Site 10 in Fiscal Year 2005.

Site Chronology – Site 10

Event	Date
Disposal area	Prior to 1950
SI	1998
Groundwater investigation	2001
Final SI Report	2001

2.22.2 Site 12 - Explosive Ordnance Disposal

Site 12 covers approximately 8 to 10 acres. During the early 1960s, ordnance was disposed by burning or detonating when it was found to be inert, unserviceable, or defective. Materials disposed included ordnance, colored smokes, and white phosphorous. Any undestroyed residues were typically less than one pound. Baker conducted soil and groundwater sampling activities in January and February 1996. Results indicate that neither soil nor groundwater has been significantly impacted by site activities. The initial NFA DD was completed in Fiscal Year 2000 for this site. This decision document indicates that all investigations or activities for the IR Program for Site 12 are complete. The Final NFA DD was completed in Fiscal Year 2001.

Site Chronology – Site 12

Event	Date
Ordnance disposal	Early 1960s
Pre-RI Screening Study	1998
Final NFA DD	2001

2.22.3 Site 68 - Rifle Range Dump

The Rifle Range Dump is located west of Range Road approximately 2,000 feet west of the former Rifle Range water treatment plant and 800 feet east of Stone Creek. This 3 to 4 acre area was used as a disposal site for various types of wastes, including garbage, building debris, waste treatment sludge, and solvents. The site was utilized as a disposal facility from 1942 to 1972. The depth of the fill area is approximately 10 feet and the amount of material deposited has been estimated to be 100,000 cubic yards.

Organic compounds were identified in potable supply wells RR-45 and RR-97 located near the site. Even though these wells are located upgradient from the site, it was suspected that continuous pumping may have drawn contaminants to the wells. Based on information provided by Camp Lejeune, these supply wells are no longer in use. Baker conducted soil, groundwater, surface water, and sediment sampling activities in January and February 1996 with additional samples collected in March 1998.

Results indicated that none of the media sampled have been significantly impacted by site activities; however, because the site was a former dump, aquifer and land use restrictions are included as part of the NFA. A Final NFA DD, which includes a LUC to implement aquifer and land use controls, was initiated in Fiscal Year 2000. Final concurrence for the NFA document was approved in Fiscal Year 2001.

Site Chronology – Site 68

Event	Date
Disposal operations	1942 to 1972
Pre-RI Screening Study	1998
Final NFA DD	2001
LUCs prepared	June 2001 (updated July 2002)
Plat maps prepared	July 2001

2.22.4 Site 75 - MCAS Basketball Court Site

The MCAS Basketball Court Site is located along the north side of Curtis Road. This site was reportedly a drum burial area that was used on at least one occasion in the early 1950s. The excavation as seen in an aerial photograph was an oval shaped pit approximately 90 feet long by 70 feet wide and was sufficiently deep to have encountered the water table. An estimated 75 to 100 55-gallon drums were placed in this pit. The drums reportedly contained a chloroacetophenone tear gas solution used for training. Additional organic chemicals, such as chloroform, carbon tetrachloride, benzene, and chloropicrin, may have been present in the solution. Degradation of the drums could have resulted in the release of the suspected materials into the groundwater. This was of particular concern due to the proximity of several water supply wells in the area, two of them within 500 feet of the alleged disposal site.

Baker conducted soil and groundwater sampling activities in January and February 1996. In addition, a comprehensive geophysical survey was performed. The geophysical survey did not indicate any major subsurface anomalies that could have been the suspected drums. The initial Final NFA DD was completed in Fiscal Year 2000. Final concurrence for the NFA document was approved in Fiscal Year 2001.

Site Chronology – Site 75

Event	Date
Drum burial area	Early 1950s
Pre-RI Screening Study	1998
Final NFA DD	2001

2.22.5 Site 76 - MCAS Curtis Road Site

The MCAS Curtis Road Site is located near and along the north side of Curtis Road. The precise location of the site is unknown, and two possible locations have been identified based on interviews and aerial photography. This alleged dump site was reportedly used as a drum disposal area on two occasions in 1949. The estimated area of the disposal unit is 1/4 acre and approximately 25 to 75 55-gallon drums were allegedly involved. It is believed that the drums contained a chloroacetophenone tear gas agent similar to that allegedly buried in the MCAS Basketball Court Site (Site 75). Potential contaminants are chloroform, carbon tetrachloride, benzene, and chloropicrin.

Baker conducted soil and groundwater sampling activities in January and February 1996. Additional groundwater data was collected in March of 1998. In addition, a comprehensive geophysical survey was also performed. The geophysical survey did not indicate any major subsurface anomalies that could have been the suspected drums. In response to an agency comment, groundwater was sampled again in October 1999 due to previous detections of metals above screening criteria. This data showed some metals above screening criteria but within range of the natural background of groundwater at Camp Lejeune. The initial NFA DD was completed in Fiscal Year 2000. Final concurrence for the NFA document was approved in Fiscal Year 2001.

Site Chronology – Site 76

Event	Date
Drum disposal area	1949
Pre-RI Screening Study	1998
Final NFA DD	2001

2.22.6 Site 85 - Camp Johnson Battery Dump

The Camp Johnson Battery Dump was recently discovered off Wilson Drive in the Montford Point Area during road repairs. Decomposed batteries, which were used in military communication equipment during the Korean era, were unearthed as a roadway was being widened. Military personnel utilizing this area also discovered discarded charcoal canisters from old air purifying respirators. The discarded battery packs and charcoal canisters were observed in piles, randomly located throughout a 2 to 3 acre area.

Baker conducted soil and groundwater sampling activities in August 1995. Results indicated that soil near the battery disposal piles has been impacted by metals leaching from the batteries. Removal of the soil and battery packs was recommended as part of a TCRA. Based upon comments by the USEPA (Region IV), an EE/CA was completed September 10, 1999, and an Action Memorandum was completed on September 17, 1999. The removal action was completed in Fiscal Year 2000 and the post removal groundwater monitoring was completed in Fiscal Year 2003. The NFA DD was completed in Fiscal Year 2004, and the final concurrence letter from the state is pending.

Site Chronology – Site 85

Event	Date
Battery disposal	unknown
Pre-RI Screening Study	1998
Action Memorandum	1999
TCRA	2000
Final NFA DD (final concurrence pending)	2004
Groundwater monitoring	2001 to 2003

2.22.7 Site 87 - MCAS Officer's Housing Area

The MCAS Officers' Housing Area site (formerly Site A) is located on the west bank of the New River. This area was identified during the second round of sampling conducted in 1986. Waste was identified eroding out of a cut bank along the New River near an officers' housing area. The materials were tentatively identified as hospital wastes. Various hospital waste materials were noted, including hypodermic needles and vials of white powder that were believed to contain a chlorine-based substance. No information was available regarding the volume of the waste or the mode of disposal and it is unclear how the materials got into the river bank.

Baker conducted soil, groundwater, surface water, sediment, and test pit sampling activities in October 1995 (groundwater, soil, surface water, and sediment) and February 1996 (test pits). Results indicate that none of the media sampled has been significantly impacted by site activities. In response to an agency comment, groundwater was sampled again in October 1999 due to a previous detection of pentachlorophenol (PCP). No PCP was detected in groundwater from the October 1999 sampling event. The initial NFA DD was completed in Fiscal Year 2000. Final concurrence for the NFA document was approved in Fiscal Year 2001.

Site Chronology – Site 87

Event	Date
Waste materials discovered	1986
Pre-RI Screening Study	1998
Final NFA DD	2001

3.0 SITE MANAGEMENT SCHEDULES

The purpose of this section is to present project schedules for Fiscal Years 2005 through 2007. These schedules are adjusted annually within the SMP or periodically throughout the Fiscal Year. The OUs and sites that will be active during Fiscal Year 2005 are summarized below.

Operable Unit	Site	Fiscal Year 2005 Activities
1	78	Groundwater pump and treatment (limited to the areas outside of the pilot scale tests); semiannual MNA sampling of surficial and Castle Hayne aquifers; completion of the Pilot Study Evaluation Reports; start Amended PRAP/ROD process.
2	82	Groundwater pump and treatment; semiannual monitoring of surficial and Castle Hayne aquifers, and surface water/sediment.
3	48	No action.
4	41 and 74	Complete Final OU Close Out Report.
5	2	Monitoring of surficial aquifer.
6	36, 43, 44, and 54	Finalize Remedial Designs; complete plat maps; semiannual MNA sampling of surficial and Castle Hayne aquifers and surface water sampling at Site 36.
7	1 and 28	No action.
8	16	No action.
9	65	No action.
10	35	Semiannual MNA sampling of surficial aquifer, and surface water sampling; ongoing operation of IAS trench; complete the Pilot Study for TCE groundwater plume; complete the removal action for the Building G480 Light Non-Aqueous Phase Liquid (LNAPL) area; start the FS.
11	7 and 80	No action.
12	3	Monitoring of surficial aquifer.
13	63	No action.
14	69	Semiannual MNA sampling of surficial and Castle Hayne aquifers.
15	88	Complete the Amended RI Report; complete the source removal action for Building 25; start the FS.
16	89 and 93	Complete the monitoring for the ERH Pilot Study (Site 89); and monitoring of surficial (Site 93) and Castle Hayne aquifers, and surface water/sediment (Site 89); complete the Amended RI Report (Site 89); start the FS.
17	90, 91, and 92	No action.
18	94	Complete the Phase I and II Investigations; start the FS and PRAP.
19	84	Finalize the Phase II IRA Close Out Report; complete the ROD.
20	86	Complete the Pilot Study on main TCE groundwater plume; monitoring of surficial and Castle Hayne aquifers; start the FS.
21	73	Complete the Pilot Study and report on main TCE groundwater plume; monitoring of the surficial and Castle Hayne aquifers; start the FS.

The project schedules for active OUs are presented in Tables 3-1 through 3-16. A project schedule for Pre-RI and PA sites is presented in Tables 3-15 and 3-16, respectively. The project schedules include a detailed listing of activities projected for Fiscal Year 2005 and beyond; the duration of each IR Program activity; the deliverables (e.g., RI/FS Project Plans); and submittal dates. A listing of deliverables projected for Fiscal Year 2005 and beyond by OU is summarized in Table 3-17. Table 3-18 provides a list of deliverables projected, by month, for Fiscal Year 2005 and beyond. It should be noted that not all of the dates are available at this time for all future document submittals. These dates are listed as to be determined (TBD) and will be updated in future deliveries of the SMP. For the sites currently in the monitoring program, the schedules have been projected through Fiscal Year 2005, although monitoring at some of the sites will go beyond Fiscal Year 2005.

The project schedules for most of the OUs reflect government/agency review times specified in the FFA. These review durations are as follows.

- Draft Documents: 60 days to review and 60 days to prepare and submit the Final document.
- Pre-Final Documents (ROD only): 30 days to review and 30 days to finalize. Pre-Final documents will become final if no comments are received within 30 days unless an extension is requested in accordance with the FFA.
- The project schedule for Remedial Design/Remedial Action (RD/RA) activities cannot be established until the RI/FS is completed. For remedial design activities, project duration of 15 months has been established because Section 120(e)(2) of CERCLA requires that remedial action activities begin within 15 months following the ROD.
- The project schedule for sites where long-term monitoring has been implemented do not indicate a government review period. Reports submitted for a long-term monitoring event are used to document recommendations and modifications to the long-term sampling requirements. Comments will be requested to implement modifications or at the five-year review period.

4.0 REMOVAL ACTIONS AND INTERIM REMEDIAL ACTIONS

Removal and interim actions are taken to prevent immediate and substantial harm to human health. Examples of removal and interim actions include site-control fencing, removal of waste containers on-site, and removal of buried drums. Interim remedial actions are conducted to prevent a potential release of contaminants or to limit further migration of contaminants.

4.1 Operable Unit No. 1 (Sites 21 and 78)

From March to December 1995, OHM performed a removal and disposal of pesticide and PCB contaminated soils contained in AOCs 1, 2, 3, and 4 of Sites 21 and 78. OHM's project activities involved two distinct phases of work: on-site field screening, and final excavation. Approximately 649.76 tons of pesticide and contaminated soil was shipped off-site for incineration disposal and approximately 160.84 tons of PCB contaminated soil was shipped off-site for disposal in a Subtitle D landfill. Confirmation sampling performed upon completion of excavation activities revealed that soils remaining on-site exhibited levels of pesticide contamination below the cleanup goals identified in the Basis of Design Report dated November 11, 1994 prepared by Baker. Cleanup goals for areas that were effected by PCB contamination were modified with the permission of the USEPA to 10 ppm. All soil on-site exhibited levels of PCB below the modified cleanup goal.

4.2 Operable Unit No. 2 (Sites 6, 9, and 82)

A TCRA was conducted for the removal of the debris and contaminated soil in 1994 at Site 6. Twenty drums of DDT were removed and contaminated soil was excavated during the removal action. Another TCRA was conducted in 1995 to remove drums, batteries, and communications wire. This removal action included six AOCs of POL contaminated soil. Over 2,655 cubic yards of soil and debris were removed from Sites 6 and 82.

Contaminated POL soil was removed during excavation work for the installation of the new Fire Training Pit at Site 9. This removal action was completed in Fiscal Year 2000.

4.3 Operable Unit No. 5 (Site 2)

A TCRA was initiated in January 1994. The TCRA involved the excavation and off-site treatment of pesticide contaminated soil and concrete. A total of 1,049 tons of pesticide contaminated soils were excavated and sent for off-site disposal.

4.4 Operable Unit No. 6 (Sites 36, 43, and 54)

During Fiscal Year 1998, a removal action was performed at Site 36. Soil contaminated with PCBs was excavated from the western-most portion of the study area. Approximately 240 tons of non-regulated and regulated PCB-contaminated soils were removed.

During 1995, a TCRA for surficial metallic debris at Site 43 was conducted. Project activities involved the removal of all surficial metallic debris, including empty drums, various scrap metal, and an old tank vehicle. Additionally, four drums (1,400 pounds) of hazardous materials were shipped off-site for disposal.

A total of 4,960 cubic yards (6,461 tons) of PAH impacted soils were excavated at Site 54 in Fiscal Year 2001. The impacted soil was disposed of at a soil reclamation facility. A new propane burning live fire training aircraft mock-up was constructed in an area adjacent to the soil excavation area. The new fire training system was turned over to the Base on January 9, 2001.

IRAs were also completed in Fiscal Year 2003 at Sites 36 and 43. A total of 1,629 tons of PAH and pesticide contaminated soils were excavated at Site 36, and a total of 1,476 tons of PAH contaminated soil were excavated at Site 43.

4.5 Operable Unit No. 10 (Site 35)

A removal action for hydrocarbon contaminated soils was performed from September 1995 to May 1996. Approximately 15,700 tons of hydrocarbon contaminated soil were shipped off-site for recycling disposal.

An interim remedial action, IAS trench, at Site 35 was installed in February 1998. The RAC initially supported the 6-month trial operation phase of the IAS system. Based upon a review of this IAS data, the trial phase was extended for three months and in 2000, it was decided to keep the system operational.

An emergency soil removal action was completed in Fiscal Year 2000 associated with a release of POL from an existing pipeline that was severed during construction of the highway 17-bypass. The impacted soils were excavated and taken to the Camp Geiger storage cell for treatment.

4.6 Operable Unit No. 11 (Site 80)

The TCRA was completed during 1996. Remedial action levels were based upon Region III Risk-Based Concentrations for industrial workers, which resulted in a ten-fold increase in the action levels for dieldrin and aldrin, the drivers of the remedial effort. Approximately 988 tons of contaminated soils were excavated from Site 80.

4.7 Operable Unit No. 12 (Site 3)

From the period June 18, 2000 to August 9, 2000, OHM excavated, managed, and disposed of 2,535 cubic yards (3,295 tons) of PAH impacted soils from OU 12 Site 3. The original scope of the excavation volume was estimated at 1,340 cubic yards. Based on final negotiations with regulators, two separate action levels for the site contaminants of concern were developed. For confirmation sampling and analysis of the excavation limits, NC DENR soil to groundwater criteria was employed for all PAH compounds detected during RI activities.

4.8 Operable Unit No. 15 (Site 88)

During Fiscal Year 1999, an interim action was completed at Site 88. Surfactants were employed to remediate DNAPLs from much of the contaminated portion of the shallow aquifer. Surfactants were injected into the shallow aquifer and then extracted with the contaminants. The on-site operations for the SEAR test and post-SEAR partitioning interwell tracer test (PITT) were completed in August 1999. The results of these operations were reported during Fiscal Year 2000 (January 2000).

In Fiscal Year 2001, several other interim remedial actions were also initiated. The Air Force started operations of the RABITT pilot scale test within the dissolved portion of the plume near monitoring wells 88-MW05 and 88-MW05IW. This pilot test was completed in Fiscal Year 2002. In addition, the RAC started AFVR activities at Site 88 by pumping free phase product monthly from six existing extraction wells. Free phase product recovery will continue in Fiscal Year 2005.

4.9 Operable Unit No. 16 (Site 89)

A TCRA was completed in Fiscal Year 2001 for contaminated vadose soil within the southern portion of the site. The soils were excavated and treated using a LTTD technology. Approximately 32,000 tons were treated and returned to the site. An aeration system was also installed and remains operational in Edwards Creek to assist in the remediation of VOCs in the creek. In addition, new fencing was also installed in areas south of the site and along Edwards Creek minimizing access to the site and creek.

4.10 Operable Unit No. 19 (Site 84)

The Phase I interim removal response action was completed in Fiscal Year 2003 at Site 84 to remove the Building 45 existing foundation and impacted soils around the former building. A total of 4,857 tons of non-hazardous PCB impacted soils and 142 tons of hazardous Toxic Substance Control Act (TSCA) contaminated soils were excavated and disposed. The Phase II response action, which included the removal and disposal of 11,604.52 tons of non-hazardous PCB impacted soils and 359.99 tons of hazardous TSCA contaminated soils, was completed in the 4th quarter of Fiscal Year 2004.

4.11 Pre-Remedial Investigation Sites

During Fiscal Year 2000, a removal action was completed for Site 85. Several battery piles at Site 85 were removed based on recommendations of the Final EE/CA for this site. The Final Close Out Report from this removal was submitted in February 2000.

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TABLES

TABLE 1-1

**INSTALLATION RESTORATION PROGRAM SITES
FISCAL YEAR 2005 SITE MANAGEMENT PLAN, CTO-0060
MCB, CAMP LEJEUNE, NORTH CAROLINA**

Site No.	Site Description
1	French Creek Liquids Disposal Area
2	Former Nursery/Day-Care Center
3	Old Creosote Site
6	Storage Lots 201 and 203
7	Tarawa Terrace Dump
9	Fire Fighting Training Pit at Piney Green Road
10	Original Base Dump
12	Explosive Ordnance Disposal (EOD-1, formerly known as G-4A)
16	Montford Point Burn Dump
21	Transformer Storage Lot 140
24	Industrial Area Fly Ash Dump
28	Hadnot Point Burn Dump
30	Sneads Ferry Road - Fuel Tank Sludge Area
35	Camp Geiger Area Fuel Farm
36	Camp Geiger Area Dump near Sewage Treatment Plant
41	Camp Geiger Dump near Former Trailer Park
43	Agan Street Dump
44	Jones Street Dump
48	MCAS New River Mercury Dump Site
54	Crash Crew Fire Training Burn Pit
63	Verona Loop Dump
65	Engineer Area Dump
68	Rifle Range Dump
69	Rifle Range Chemical Dump
73	Courthouse Bay Liquids Disposal Area
74	Mess Hall Grease Pit Area
75	MCAS Basketball Court Site
76	MCAS Curtis Road Site
78	Hadnot Point Industrial Area
80	Paradise Point (Golf Course Maintenance Area)

TABLE 1-1 (Continued)

**INSTALLATION RESTORATION PROGRAM SITES
FISCAL YEAR 2005 SITE MANAGEMENT PLAN, CTO-0060
MCB, CAMP LEJEUNE, NORTH CAROLINA**

Site No.	Site Description
82	VOC Disposal Area at Piney Green Road
84	Building 45 Area
85	Camp Johnson Battery Dump
86	Tank Area AS419-AS421 at MCAS
87	MCAS Officer's Housing Area (formerly Site A)
88	Building 25
89	Former DRMO
90	Building BB-9
91	Building BB-51
92	Building BB-46
93	TC-942
94	Building 1613

TABLE 1-2

INSTALLATION RESTORATION PROGRAM ACTIVITIES FOR FY2005-FY2007
 FISCAL YEAR 2005 SITE MANAGEMENT PLAN, CTO 0060
 MCB, CAMP LEJEUNE, NORTH CAROLINA

OU No.	Site No.	PA	SI	RI	Phot Study	NFA	NFRAP	IRA	FS	EECA	PRAP	ROD	RD	Interim ROD	RA	Amended ROD/PRAP	OU Clossout	ROD Actions	LTM Start	LTM Stop	
1	21					X						994						NFA		1097	
	24					X						994						LTM	0795		
2	78				● (Groundwater)							994 ⁽¹⁾			● (O&M and LTM)	●		GT/LTM	0795		
	6											993			● (LTM)			GT/LTM	0796		
	9					X						993						NFA			
3	82											993			● (O&M and LTM)			GT/LTM	0796		
	48					X						993						GT/LTM			
4	41											1295			● (LTM)			LTM	0197		
	74					X						1295					●	LTM	0197	798	
5	2											994			● (LTM)			LTM	0795		
	36											● (5)			● (LTM)					1098	
6	43											● (5)									
	44											● (5)									
7	54											● (5)									
	1					X						596								0798	0102
	28					X						596							LTM	0196	0101
	30					X						596							LTM	0196	1001

TABLE 1-2 (Continued)

INSTALLATION RESTORATION PROGRAM ACTIVITIES FOR FY2005-FY2007
 FISCAL YEAR 2005 SITE MANAGEMENT PLAN, CTO 0060
 MCB, CAMP LEJEUNE, NORTH CAROLINA

OU No.	Site No.	PA	SI	RI	Pilot Study	NFA	NFRAP	IRA	FS	EE/CA	PRAP	ROD	RD	Interim ROD	RA	Amended ROD/PRAP	OU Closeout	ROD Actions	LTM Start	LTM Stop
8	16					X						996						NFA		
9	65					X						901						NFA		
10	35				• (Groundwater)				\$		\$	\$ ²	\$		\$			GT		
11	7					X						897						NFA		
	80					X						897						NFA		
12	3											497 ³			• (LTM)			LTM	01/97	
13	63					X						497						NFA		
14	69											\$	\$	600 ⁴	• (LTM)	\$		MNALTM	10/98	
15	88			•				•	\$	•	\$	\$	\$		\$				01/99	07/01
16	89			•				•			\$	\$	\$		\$				04/99	
	93								•		•	897			\$				04/99	
17	90					X						897						NFA		
	91					X						497 ³						NFA	07/00	01/02
	92					X						901						NFA	07/00	04/01
18	94		•	•					•		\$	\$								
19	84							•				\$			\$					
20	86				• (Groundwater)				\$		\$	\$			\$				01/98	
21	73				• (Groundwater)				\$		\$	\$			\$				07/00	
Pre-RI Sites	10						X													
	12					X														
	68						X													
	75					X														
	76					X														
	85						X												07/01	
PA Sites	902	•																		
	908	•																		
	1120	•																		
	1124	•																		

TABLE 1-2 (Continued)

INSTALLATION RESTORATION PROGRAM ACTIVITIES FOR FY2005-FY2007
 FISCAL YEAR 2005 SITE MANAGEMENT PLAN, CTO 0060
 MCB, CAMP LEJEUNE, NORTH CAROLINA

OU No.	Site No.	PA	SI	RI	Plot Study	NFA	NFRAP	IRA	FS	EE/CA	PRAP	ROD	RD	Interim ROD	RA	Amended ROD/PRAP	OU Closeout	ROD Actions	LTM Start	LTM Stop	
	1409	•																			
	1512	•																			
	TC830	•																			
	SAS113	•	\$																		
	AS116	•	\$																		
	AS119	•	\$																		
	MI19	•	\$																		
	SMI73	•																			

Notes:

EE/CA = Engineering Evaluation/Cost Analysis

FS = Feasibility Study

GT = Groundwater Treatment

IRA = Interim Response Action

LTM = Long-Term Monitoring

MNA = Monitored Natural Attenuation

NFA = No Further Action

NFRAP = No Further Remedial Action Plan

PRAP = Proposed Remedial Action

PA = Preliminary Assessment

RA = Remedial Action

RI = Remedial Investigation

ROD = Record of Decision

SI = Site Inspection

X = No Additional Funding Required

• = Currently Funded

\$ = Funding or Additional Funding May be Required

(1) = IROD for shallow aquifer signed FS on September 23, 1992

(2) = IRODs for soil and groundwater signed on September 15, 1994, and September 22, 1995, respectively.

(3) = Amended ROD signed on June 20, 2000

(4) = IROD signed on June 29, 2000

(5) = Signed ROD is pending

TABLE 1-3
SUMMARY OF LUC BOUNDARIES
FISCAL YEAR 2005 SITE MANAGEMENT PLAN, CTO-0060
MCB CAMP LEJEUNE, NORTH CAROLINA

Operable Unit	Sites	LUCIP Boundary	Estimated Area (Acres)	Final Submitted	Version II Update
1	21, 24, 78	Non-Industrial Land Use Control - Soil	0.815	June 15, 2001	July, 2002
		Intrusive Activities - Groundwater	102.28	June 15, 2001	July, 2002
		Aquifer Restriction (1000 feet)	501.54	June 15, 2001	July, 2002
2	6, 9, 82	Non-Industrial Land Use Control - Soil	206.75	June 15, 2001	July, 2002
		Intrusive Activities - Groundwater	99.4	June 15, 2001	July, 2002
		Aquifer Restriction (1000 feet)	404.91	June 15, 2001	July, 2002
4	41, 74	Non-Industrial Land Use Control - Soil (Site 41)	36.6	June 15, 2001	July, 2002
		Intrusive Activities - Groundwater (Site 41)	16.4	June 15, 2001	July, 2002
		Intrusive Activities - Soil (Site 41)	36.6	June 15, 2001	July, 2002
		Aquifer Restriction (500 feet - Site 41)	86.4	June 15, 2001	July, 2002
		Access Control Boundary (Site 41)	30	June 15, 2001	July, 2002
		Non-Industrial Land Use Control - Soil (Site 74)	23.8	June 15, 2001	July, 2002
		Intrusive Activities - Groundwater (Site 74)	13.9	June 15, 2001	July, 2002
		Intrusive Activities - Soil (Site 41)	23.8	June 15, 2001	July, 2002
		Aquifer Restriction (500 feet - Site 74)	71.2	June 15, 2001	July, 2002
Access Control Boundary (Site 74)	8	June 15, 2001	July, 2002		
5	2	Non-Industrial Land Use Control - Soil	3.2	June 15, 2001	July, 2002
		Intrusive Activities - Groundwater	1.8	June 15, 2001	July, 2002
		Aquifer Restriction (1000 feet)	31.5	June 15, 2001	July, 2002
6	36, 43, 44, 54	Non-Industrial Land Use Control - Soil (Site 36)	4.8	August 24, 2004	NA
		Intrusive Activities - Soil (Site 36)	4.8	August 24, 2004	NA
		Intrusive Activities - Groundwater (Site 36)	4.8	August 24, 2004	NA
		Aquifer Restriction (1000 feet - Site 36)	64.1	August 24, 2004	NA
		Non-Industrial Land Use Control - Soil (Site 43)	0.14	August 24, 2004	NA
		Intrusive Activities - Soil (Site 43)	13.2	August 24, 2004	NA
		Intrusive Activities - Soil (Site 44)	5.6	August 24, 2004	NA
		Non-Industrial Land Use Control - Soil (Site 54)	0.3	August 24, 2004	NA
		Intrusive Activities - Soil (Site 54)	4.5	August 24, 2004	NA
7	1, 28	Non-Industrial Land Use Control - (combined)	33.8	June 15, 2001	July, 2002
		Intrusive Activities - Groundwater (Site 28)	4	June 15, 2001	July, 2002
		Aquifer Restriction (1000 feet - combined)	171.6	June 15, 2001	July, 2002
8	16	Non-Industrial Land Use Control - Soil	2.1	June 15, 2001	July, 2002
		Intrusive Activities - Groundwater	0.69	June 15, 2001	July, 2002
		Aquifer Restriction (1000 feet)	60.2	June 15, 2001	July, 2002
12	3	Non-Industrial Land Use Control - Soil	0.14	June 15, 2001	July, 2002
		Intrusive Activities - Groundwater	4.1	June 15, 2001	July, 2002
		Aquifer Restriction (1000 feet)	85.2	June 15, 2001	July, 2002

**TABLE 1-3
SUMMARY OF LUC BOUNDARIES
FISCAL YEAR 2005 SITE MANAGEMENT PLAN, CTO-0060
MCB CAMP LEJEUNE, NORTH CAROLINA**

Operable Unit	Sites	LUCIP Boundary	Estimated Area (Acres)	Final Submitted	Version II Update
13	63	Intrusive Activities - Groundwater Aquifer Restriction (1000 feet)	2 100.1	June 15, 2001 June 15, 2001	July, 2002 July, 2002
14	69	Non-Industrial Land Use Control - Soil Intrusive Activities - Groundwater Aquifer Restriction (1000 feet) Site Access Controls	13.9 8 127.2 13.9	June 15, 2001 June 15, 2001 June 15, 2001 June 15, 2001	July, 2002 July, 2002 July, 2002 July, 2002
19	84	To be determined for final ROD	TBD	TBD	TBD
Pre-RI Site	68	Non-Industrial Land Use Control - Soil Intrusive Activities - Groundwater Aquifer Restriction (1000 feet)	202.69	June 15, 2001 June 15, 2001 June 15, 2001	July, 2002 July, 2002 July, 2002

**OPERABLE UNIT DESCRIPTIONS
FISCAL YEAR 2005 SITE MANAGEMENT PLAN, CTO-0060
MCB, CAMP LEJEUNE, NORTH CAROLINA**

TABLE 2-1

Operable Unit No.	Site No(s).	Site Name(s)	Primary Reasons for OU Selection
1	21	Transformer Storage Lot 140	Geographic location of sites.
	24	Industrial Area Fly Ash Dump	
	78	Hadnot Point Industrial Area	
	21	Hadnot Point Industrial Area	
2	6	Storage Lots 201 and 203	Geographic location of sites.
	9	Firefighting Training Pit at Piney Green Road	
	82	Piney Green Road VOC Area	
3	48	MCAS New River Mercury Dump Site	Unique characteristic of suspected waste (mercury).
	41	Camp Geiger Dump Near Former Trailer Park	
4	74	Mess Hall Grease Disposal Area.	Unique characteristic of suspected waste (chemical warfare materials).
	41	Camp Geiger Dump Near Former Trailer Park	
	43	Agan Street Dump	
	44	Jones Street Dump	
6	36	Camp Geiger Area Dump near Sewage Treatment Plant	Similar characteristics of material disposed (POL, waste oils, solvents) and contaminants detected (metals, VOCs, O&G). Geographic location of sites.
	54	Crash Crew Fire Training Burn Pit	
	1	French Creek Liquids Disposal Area	
	28	Hadnot Point Burn Dump	
	30	Sneads Ferry Road Fuel Tank Sludge Area	
7	1	French Creek Liquids Disposal Area	Geographic location of sites. Unique characteristic of suspected waste (O&G, POL, and metals).
	28	Hadnot Point Burn Dump	
8	16	Montford Point Burn Dump	Geographic location of site.
	65	Engineer Area Dump	
	10	Camp Geiger Area Fuel Farm	
10	35	Camp Geiger Area Fuel Farm	Accelerated cleanup necessary to abate impacts to Brinson Creek.
	7	Tarawa Terrace Dump	
11	80	Paradise Point (Golf Course Maintenance Area)	Geographic location of sites.
	3	Old Creosote Plant	
12	3	Old Creosote Plant	Isolated site with unique waste source.
13	63	Verona Loop Dump	Isolated site with unique waste source.

TABLE 2-1 (Continued)

OPERABLE UNIT DESCRIPTIONS
 FISCAL YEAR 2004 SITE MANAGEMENT PLAN, CTO-0060
 MCB, CAMP LEJEUNE, NORTH CAROLINA

Operable Unit No.	Site No(s).	Site Name(s)	Primary Reasons for OU Selection
14	69	Rifle Range Chemical Dump	Isolated site with unique waste source.
15	88	Building 25, Base Dry Cleaners	Unique characteristic of suspected waste (dry cleaning solvent).
16	89 93	Former DRMO TC-942	Geographic location of sites and adjacent surface water body. Unique characteristic of suspected waste (solvents).
17	90 91 92	Building BB-9 Building BB-51 Building BB-46	Former UST sites with similar contamination detected in groundwater.
18	94	Building 1613	Geographic location of site, within Site 78, and similar contaminants adjacent shallow groundwater plume. Former UST site.
19	84	Building 45 Area	Isolated site with unique waste (PCBs, POL).
20	86	Tank Area AS419-AS421 at MCAS	Operable Unit created for Site 86 due to increasing levels of VOCs. Site 86 was originally included under OU 6.
21	73	Courthouse Bay Liquids Disposal Area	Unique characteristic of suspected wastes (POL, solvents).

TABLE 2-2

SUMMARY OF OPERABLE UNIT IRP ACTIVITIES
 FISCAL YEAR 2005 SITE MANAGEMENT PLAN, CTO - 0060
 MCB, CAMP LEJEUNE, NORTH CAROLINA

Operable Unit	Site No.	Activity	Scheduled Start Up	Actual Start Up	Scheduled Completion	Actual Completion	Final Submittal/ Completion Date	ROD/IROD Signature Date
1	24	Final LTM Report	FY 01	FY 01	FY 02	--	--	
1	78	Interim Remedial Action RI	FY 91	FY 91	FY 92	FY 92	April 16, 1992	September 23, 1992
		Interim Remedial Action FS	FY 91	FY 91	FY 92	FY 92	April 16, 1992	
		Interim Remedial Action PRAP	FY 91	FY 91	FY 92	FY 92	May 8, 1992	
		Interim Remedial Action ROD	FY 91	FY 91	FY 92	FY 92	September 23, 1992	
		Interim Remedial Action Design	FY 92	FY 92	FY 94	FY 93	June 18, 1993	
		Technology Evaluation Report	FY 02	FY 02	FY 02	FY 02	April 16, 2002	
		Technology Evaluation Summary	FY 02	FY 02	FY 02	FY 02	July 30, 2002	
		Treatability Study/Pilot Test Work Plan	FY 02	FY 02	FY 03	FY 03	February 20, 2003	
		Pilot Study Test	FY 03	FY 03	FY 04	FY04	July 21, 2004	
		Pilot Study Report	FY 05	FY05	FY 05	--	--	
		Amended PRAP	FY 06	--	FY 06	--	--	
		Amended ROD	FY 06	--	FY 06	--	--	
1	21, 24, and 78	Project Plans	FY 92	FY 92	FY 93	FY 93	March 11, 1993	September 15, 1994
		RI	FY 93	FY 93	FY 94	FY 94	June 23, 1994	
		FS	FY 94	FY 94	FY 94	FY 94	July 22, 1994	
		PRAP	FY 94	FY 94	FY 94	FY 94	July 22, 1994	
		ROD	FY 94	FY 94	FY 94	FY 94	September 8, 1994	
		LUC	FY 99	FY 99	FY 00	FY 01	June 2001	
		Revised LUC Version 1	FY 02	FY 02	FY 02	FY 02	July 2002	
2	6, 9, and 82	Project Plans	FY 91	FY 91	FY 92	FY 92	May 18, 1992	September 24, 1993
		RI	FY 92	FY 92	FY 94	FY 93	August 20, 1993	
		FS	FY 92	FY 92	FY 94	FY 93	August 20, 1993	
		PRAP	FY 92	FY 92	FY 94	FY 93	August 20, 1993	
		ROD	FY 92	FY 92	FY 94	FY 93	September 24, 1993	
		Remedial Design	FY 94	FY 94	FY 95	FY 94	May 10, 1994	
		LUC	FY 99	FY 99	FY 00	FY 01	June 2001	
		Revised LUC Version 1	FY 02	FY 02	FY 02	FY 02	July 2002	
		Technical Evaluation	FY 01	FY 04	FY 02	--	--	

TABLE 2-2 (Continued)

SUMMARY OF OPERABLE UNIT IRP ACTIVITIES
 FISCAL YEAR 2005 SITE MANAGEMENT PLAN, CTO -0060
 MCB, CAMP LEJEUNE, NORTH CAROLINA

Operable Unit	Site No.	Activity	Scheduled Start Up	Actual Start Up	Scheduled Completion	Actual Completion	Final Submittal/ Completion Date	ROD/IROD Signature Date
3	48	Project Plans	FY 91	FY 91	FY 92	FY 92	May 18, 1992	September 10, 1993
		RI	FY 92	FY 92	FY 94	FY 93	June 21, 1993	
		PRAP	FY 92	FY 92	FY 94	FY 93	June 21, 1993	
		ROD	FY 92	FY 92	FY 94	FY 93	July 26, 1993	
4	41 and 74	Project Plans	FY 93	FY 93	FY 94	FY 94	December 2, 1993	December 5, 1995
		RI	FY 94	FY 94	FY 95	FY 95	May 8, 1995	
		FS	FY 94	FY 94	FY 95	FY 95	May 8, 1995	
		PRAP	FY 94	FY 94	FY 95	FY 95	May 8, 1995	
		ROD	FY 94	FY 94	FY 95	FY 95	October 17, 1995	
		LUC	FY 00	FY 00	FY 00	FY 01	June 2001	
		Revised LUC Version 1 OU Close Out Report	FY 02 FY 05	FY 02 FY 05	FY 02 FY 05	FY 02 FY 05	July 2002	
4	74	Final LTM Report	FY 01	FY 01	FY 02	--	--	
5	2	Project Plans	FY 92	FY 92	FY 93	FY 93	March 11, 1993	September 15, 1994
		RI	FY 93	FY 93	FY 94	FY 94	June 14, 1994	
		FS	FY 93	FY 93	FY 94	FY 94	June 23, 1994	
		PRAP	FY 93	FY 93	FY 94	FY 94	June 23, 1994	
		ROD	FY 93	FY 93	FY 94	FY 94	September 8, 1994	
		LUC	FY 99	FY 99	FY 00	FY 01	June 2001	
Revised LUC Version 1	FY 02	FY 02	FY 02	FY 02	July 2002			
6	36, 43, 44, and 54	Project Plans	FY 94	FY 94	FY 95	FY 95	December 2, 1994	
		RI	FY 95	FY 95	FY 97	FY 96	August 22, 1996	
		FS	FY 95	FY 95	FY 97	FY 98	June 24, 1998	
		Revised FS	FY 02	FY 02	FY 02	FY 02	June 19, 2002	
		PRAP	FY 95	FY 95	FY 97	FY 98	June 18, 1998	
		Revised PRAP	FY 02	FY 02	FY 02	FY 02	June 18, 2002	
		Pre-Final ROD	FY 95	FY 96	FY 97	FY 04	February 21, 2004 Version 5	
		Final ROD	FY 95	FY 95	FY 97	FY 05	--	
		RD	FY 05	--	FY 05	--	--	

TABLE 2-2 (Continued)

SUMMARY OF OPERABLE UNIT IRP ACTIVITIES
 FISCAL YEAR 2005 SITE MANAGEMENT PLAN, CTO -0060
 MCB, CAMP LEJEUNE, NORTH CAROLINA

Operable Unit	Site No.	Activity	Scheduled Start Up	Actual Start Up	Scheduled Completion	Actual Completion	Final Submittal/ Completion Date	ROD/IROD Signature Date
6	36 and 43	EE/CA	FY 02	FY 02	FY 02	FY 03	October 22, 2002	
		Action Memorandum	FY 02	FY 02	FY 02	FY 03	November 20, 2002	
		Response Action Work Plan	FY 03	FY 03	FY 03	FY 03	February, 2003	
		Response Action Close Out Report	FY 03	FY 03	FY 03	FY 04	October, 2004	
7	1, 28, and 30	Project Plans	FY 93	FY 93	FY 94	FY 94	December 15, 1993	May 16, 1996
		RI	FY 94	FY 94	FY 95	FY 96	June 29, 1995	
		FS	FY 94	FY 94	FY 95	FY 96	July 13, 1995	
		PRAP	FY 94	FY 94	FY 95	FY 96	July 13, 1995	
		ROD	FY 94	FY 94	FY 95	FY 96	December 13, 1995	
		LUC	FY 99	FY 99	FY 00	FY 01	June 2001	
		Revised LUC Version 1	FY 02	FY 02	FY 02	FY 02	July 2002	
Final OU Close Out Report	FY 02	FY 02	FY 02	FY 02	September 6, 2002			
8	16	Project Plans	FY 94	FY 94	FY 94	FY 94	October 2, 1994	September 30, 1996
		RI	FY 94	FY 94	FY 96	FY 96	January 31, 1996	
		PRAP	FY 94	FY 94	FY 96	FY 96	February 15, 1996	
		ROD	FY 94	FY 94	FY 96	FY 96	April 12, 1996	
		LUC	FY 99	FY 99	FY 99	FY 01	June 2001	
		Revised LUC Version 1	FY 02	FY 02	FY 02	FY 02	July 2002	
9	65	Project Plans	FY 94	FY 94	FY 95	FY 95	March 7, 1995	September 30, 2001
		RI	FY 95	FY 95	FY 98	FY 98	November 7, 1997	
		FS	FY 95	FY 95	FY 98	FY 98	July 31, 1998	
		PRAP	FY 95	FY 95	FY 98	FY 01	July 18, 2001	
		ROD	FY 95	FY 95	FY 98	FY 01	August 24, 2001	

TABLE 2-2 (Continued)

SUMMARY OF OPERABLE UNIT IRP ACTIVITIES
 FISCAL YEAR 2005 SITE MANAGEMENT PLAN, CTO -0060
 MCB, CAMP LEJEUNE, NORTH CAROLINA

Operable Unit	Site No.	Activity	Scheduled Start Up	Actual Start Up	Scheduled Completion	Actual Completion	Final Submittal/ Completion Date	ROD/IROD Signature Date
10	35	Project Plans	FY 93	FY 93	FY 94	FY 94	December 20, 1993	
		Interim Remedial Action FS (Soil)	FY 93	FY 93	FY 94	FY 94	July 20, 1994	
		Interim Remedial Action PRAP (Soil)	FY 93	FY 93	FY 94	FY 94	July 20, 1994	
		Interim Remedial Action ROD (Soil)	FY 93	FY 93	FY 94	FY 94	September 15, 1994	September 15, 1994
		Interim Remedial Action FS (Groundwater)	FY 95	FY 95	FY 95	FY 95	June 13, 1995	
		Interim Remedial Action PRAP (Groundwater)	FY 95	FY 95	FY 95	FY 95	June 8, 1995	
		Interim Remedial Action ROD (Groundwater)	FY 95	FY 95	FY 95	FY 95	September 22, 1995	September 22, 1995
		RI	FY 94	FY 94	FY 95	FY 95	May 3, 1995	
		Treatability Study - Air Sparge Trench	FY 96	FY 96	FY 96	FY 96	May 31, 1996	
		Interim Action Remedial Design	FY 97	FY 97	FY 97	FY 97	April 14, 1997	
		NAE Work Plans	FY 99	FY 99	FY 99	FY 99	December 4, 1998	
		Focused NAE Work Plans	FY 99	FY 99	FY 99	FY 99	January 7, 2002	
		Supplemental NAE Report	FY 02	FY 02	FY 02	FY 02	August 14, 2002	
		Final NAE Report	FY 01	FY 03	FY 01	FY 03	April 17, 2003	
		Technology Evaluation Report	FY 02	FY 03	FY 03	FY 04	December 2003	
		Treatability Study/Pilot Test Work Plan	FY 03	FY 03	FY 03	FY 04	February 3, 2004	
		Pilot Study Test	FY 03	FY 04	FY 04	FY 04	--	
		Pilot Study Report	FY 05	--	FY 06	--	--	
		Amended RI	FY 06	--	FY 06	--	--	
		FS	FY 06	--	FY 06	--	--	
PRAP	FY 07	--	FY 07	--	--			
ROD	FY 07	--	FY 07	--	--			
RD	FY 07	--	FY 07	--	--			
RA	FY 07	--	FY 07	--	--			
11	7	Project Plans	FY 94	FY 94	FY 94	FY 95	October 2, 1994	
		RI	FY 94	FY 94	FY 97	FY 96	February 6, 1996	
		PRAP	FY 94	FY 95	FY 97	FY 96	November 27, 1996	
		ROD	FY 94	FY 96	FY 97	FY 97	April 10, 1997	August 21, 1997

TABLE 2-2 (Continued)

SUMMARY OF OPERABLE UNIT IRP ACTIVITIES
 FISCAL YEAR 2005 SITE MANAGEMENT PLAN, CTO -0060
 MCB, CAMP LEJEUNE, NORTH CAROLINA

Operable Unit	Site No.	Activity	Scheduled Start Up	Actual Start Up	Scheduled Completion	Actual Completion	Final Submittal/ Completion Date	ROD/IROD Signature Date
11	80	Project Plans	FY 94	FY 94	FY 94	FY 95	October 2, 1994	August 21, 1997
		TCRA Work Plan for Soils	FY 95	FY 95	FY 96	FY 96	April 10, 1996	
		TCRA Close Out Report	FY 95	FY 95	FY 96	FY 96	September 9, 1996	
		RI	FY 94	FY 94	FY 97	FY 96	April 5, 1996	
		PRAP	FY 94	FY 94	FY 97	FY 96	November 27, 1996	
		ROD	FY 94	FY 94	FY 97	FY 97	April 10, 1997	
12	3	Project Plans	FY 94	FY 94	FY 94	FY 95	October 2, 1994	April 3, 1997 June 20, 2000
		RI	FY 94	FY 94	FY 97	FY 96	June 12, 1996	
		FS	FY 94	FY 94	FY 97	FY 96	August 14, 1996	
		PRAP	FY 94	FY 94	FY 97	FY 97	October 23, 1996	
		ROD	FY 94	FY 94	FY 97	FY 97	January 6, 1997	
		Amended ROD	FY 99	FY 99	FY 00	FY 00	July 28, 1999	
		LUC	FY 99	FY 99	FY 00	FY 01	June 2001	
		Revised LUC Version 1	FY 02	FY 02	FY 02	FY 02	July 2002	
		Project Plans	FY 95	FY 95	FY 96	FY 95	September 1, 1995	
		RI	FY 96	FY 96	FY 97	FY 97	October 18, 1996	
13	63	PRAP	FY 96	FY 96	FY 97	FY 97	November 1, 1996	April 3, 1997
		ROD	FY 96	FY 96	FY 97	FY 97	January 21, 1996	
		LUC	FY 00	FY 00	FY 00	FY 01	June 2001	
		Revised LUC Version 1	FY 02	FY 02	FY 02	FY 02	July 2002	
		Project Plans	FY 93	FY 93	FY 94	FY 94	December 2, 1993	
		RI	FY 94	FY 94	FY 97	FY 97	December 5, 1997	
14	69	Treatability Study	FY 97	FY 97	FY 98	FY 98	January 30, 1998	June 29, 2000
		Final RI	FY 94	FY 94	FY 97	FY 99	October 4, 1999	
		PRAP	FY 94	FY 94	FY 97	--	--	
		Pre-Final Interim	FY 94	FY 94	FY 97	FY 99	October 4, 1999	
		Final Interim ROD	FY 99	FY 99	FY 00	FY 00	June 29, 2000	
		LUC	FY 00	FY 00	FY 00	FY 01	June 2001	
		Revised LUC Version 1	FY 02	FY 02	FY 02	FY 02	July 2002	
		Confirmation Study	FY 05	--	FY 06	--	--	
		ROD	FY 06	--	FY 06	--	--	
		RD	FY 06	--	FY 07	--	--	
		RA	FY 07	--	--	--	--	

TABLE 2-2 (Continued)

SUMMARY OF OPERABLE UNIT IRP ACTIVITIES
 FISCAL YEAR 2005 SITE MANAGEMENT PLAN, CTO -0060
 MCB, CAMP LEJEUNE, NORTH CAROLINA

Operable Unit	Site No.	Activity	Scheduled Start Up	Actual Start Up	Scheduled Completion	Actual Completion	Final Submittal/Completion Date	ROD/IROD Signature Date
15	88	Project Plans	FY 96	FY 96	FY 97	FY 97	February 21, 1997	
		Focused RI	FY 97	FY 97	FY 98	FY 98	May 15, 1998	
		SEAR Investigation/Demonstration	FY 98	FY 98	FY 99	FY 99	January 25, 2000	
		Amended RI Work Plan	FY 02	FY 03	FY 03	FY 03	July 7, 2003	
		Amended RI	FY 02	FY 03	FY 06	--	--	
		Source Removal EE/CA (Building 25)	FY 04	FY 04	FY 04	FY 04	September 24, 2004	
		Source Removal Action (Building 25)	FY 05	--	FY 05	--	--	
		FS	FY 06	--	FY 06	--	--	
		PRAP	FY 06	--	FY 06	--	--	
		ROD	FY 06	--	FY 06	--	--	
		RD	FY 06	--	FY 07	--	--	
		RA	FY 07	--	--	--	--	
		16	89	Project Plans	FY 95	FY 95	FY 97	FY 97
Focused RI	FY 95			FY 96	FY 98	FY 98	June 15, 1998	
Action Memo (Southern DRMO)	FY 00			FY 00	FY 00	FY 00	June 9, 2000	
Remedial Design (Southern DRMO) for TCRA	FY 00			FY 00	FY 00	FY 00	June 16, 2000	
TCRA (Southern DRMO) - Soil	FY 00			FY 01	FY 01	FY 01	June 2001	
EE/CA (Southern DRMO) - Groundwater	FY 00			FY 01	FY 01	FY 01	November 1, 2002	
ERH Pilot Study Work Plan	FY 02			FY 02	FY 02	FY 02	December 18, 2002	
ERH Pilot Test Design	FY 02			FY 03	FY 03	FY 03	May 14, 2003	
ERH Pilot Study	FY 01			FY 03	FY 02	--	--	
ERH Pilot Study Report	FY 04			FY 04	FY 05	--	--	
RI (Site-wide)	FY 04			FY 04	FY 05	--	--	
FS (Site-wide)	FY 05			--	FY 06	--	--	
PRAP	FY 05			--	FY 06	--	--	
ROD	FY 06	--	FY 06	--	--			
RD	FY 06	--	FY 07	--	--			
RA	FY 07	--	--	--	--			

TABLE 2-2 (Continued)

**SUMMARY OF OPERABLE UNIT IRP ACTIVITIES
FISCAL YEAR 2005 SITE MANAGEMENT PLAN, CTO -0060
MCB, CAMP LEJEUNE, NORTH CAROLINA**

Operable Unit	Site No.	Activity	Scheduled Start Up	Actual Start Up	Scheduled Completion	Actual Completion	Final Submittal/ Completion Date	ROD/IROD Signature Date	
16	93	Project Plans	FY 95	FY 95	FY 97	FY 97	February 20, 1997		
		RI	FY 95	FY 96	FY 98	FY 98	June 15, 1998		
		Additional Plume Characterization Report	FY 02	FY 02	FY 02	FY 02	April 2, 2002		
		Technology Evaluation Report	FY 02	FY 03	FY 03	--	--		
		FS	FY 05	FY 05	FY 05	--	--		
		PRAP	FY 05	--	FY 06	--	--		
		ROD	FY 06	--	FY 06	--	--		
		RD	FY 06	--	FY 07	--	--		
17	90, 91, and 92	Project Plans	FY 96	FY 96	FY 97	FY 96	June 31, 1996	September 30, 2001	
		Focused RI	FY 97	FY 97	FY 98	FY 01	April 27, 2001		
		PRAP	FY 98	FY 98	FY 98	FY 01	July 18, 2001		
		ROD	FY 98	FY 98	FY 98	FY 01	August 24, 2001		
18	94	Project Plans	FY 03	FY 04	FY 04	FY 04	April 16, 2004		
		RI Baseline Field Investigation	FY 03	FY 03	FY 03	FY 03	September 20, 2003		
		RI Field Investigation	FY 04	04	FY 05	FY 05	October 20, 2004		
		RI	FY 05	--	FY 05	--	--		
		FS	FY 05	--	FY 06	--	--		
		PRAP	FY 05	--	FY 06	--	--		
		ROD	FY 05	--	FY 06	--	--		
		RD	FY 05	--	FY 06	--	--		
RA	FY 06	--	FY 06	--	--				
19	84	SI	FY 95	FY 95	FY 99	FY 99	November 24, 1998		
		Trip Report	FY 99	FY 99	FY 99	FY 99	September 17, 1999		
		Project Plans	FY 99	FY 00	FY 00	FY 01	June 1, 2001		
		Non-TCRA Building 45 Work Plan	FY 02	FY 02	FY 02	FY 02	January 2, 2002		
		Phase I Response Action (Building 45) Close Out	FY 02	FY 02	FY 03	FY 03	January 15, 2003		
		RI	FY 00	FY 01	FY 02	FY 02	June 27, 2002		
		FS	FY 00	FY 02	FY 02	FY 02	June 4, 2002		
		PRAP	FY 00	FY 02	FY 02	FY 02	June 18, 2002		
		EE/CA	FY 02	FY 02	FY 02	FY 03	October 22, 2002		
		Action Memorandum	FY 02	FY 02	FY 02	FY 03	November 20, 2002		
		Phase II Response Action Work Plan	FY 03	FY 03	FY 04	FY 04	October 10, 2003		

TABLE 2-2 (Continued)

SUMMARY OF OPERABLE UNIT IRP ACTIVITIES
 FISCAL YEAR 2005 SITE MANAGEMENT PLAN, CTO -0060
 MCB, CAMP LEJEUNE, NORTH CAROLINA

Operable Unit	Site No.	Activity	Scheduled Start Up	Actual Start Up	Scheduled Completion	Actual Completion	Final Submittal/ Completion Date	ROD/TROD Signature Date
19 (Continued)	84 (Continued)	Phase II Response Action Close Out	FY 03	FY 04	FY 04	--	--	
		Site Evaluation	FY 05	FY 05	FY 06	--	--	
		ROD	FY 03	FY 03	FY 06	--	--	
		RD	FY 06	--	FY 07	--	--	
		RA	FY 07	--	FY 07	--	--	
20	86	Initial Project Plans	FY 94	FY 94	FY 95	FY 95	December 2, 1994	
		RI (under OU 6)	FY 95	FY 95	FY 97	FY 96	August 22, 1996	
		FS (under OU 6)	FY 95	FY 95	FY 97	FY 98	June 24, 1998	
		PRAP (under OU 6)	FY 95	FY 95	FY 97	FY 98	June 18, 1998	
		Amended RI	FY 00	FY 02	FY 02	FY 03	May 21, 2003	
		Technology Evaluation Report	FY 02	FY 02	FY 03	FY 03	December 2003	
		Treatability Study/Pilot Test Work Plan	FY 03	FY 03	FY 03	--	--	
		Pilot Study Test	FY 04	--	FY 05	--	--	
		Pilot Study Report	FY 05	--	FY 06	--	--	
		Amended FS	FY 06	--	FY 06	--	--	
		Amended PRAP	FY 06	--	FY 06	--	--	
		ROD	FY 06	--	FY 07	--	--	
		RD	FY 06	--	FY 07	--	--	
		RA	FY 07	--	FY 07	--	--	
		21	73	Project Plans	FY 94	FY 94	FY 95	FY 95
RI	FY 95			FY 95	FY 98	FY 98	November 7, 1997	
Modeling Report	FY 97			FY 97	FY 98	FY 98	April 27, 1998	
NAE Study	FY 99			FY 99	FY 00	FY 02	January 7, 2002	
Technology Evaluation Report	FY 02			FY 02	FY 03	FY 03	May 8, 2003	
Treatability Study/Pilot Test Work Plan	FY 03			FY 03	FY 03	FY 04	November 14, 2003	
Pilot Study Test	FY 03			FY 04	FY 05	--	--	
Pilot Study Report	FY 05			--	FY 05	--	--	
Site Evaluation	FY 05			--	FY 06	--	--	
FS	FY 05			--	FY 06	--	--	
PRAP	FY 06			--	FY 06	--	--	
ROD	FY 06			--	FY 06	--	--	
RD	FY 06			--	FY 06	--	--	
RA	FY 07			--	FY 07	--	--	

TABLE 2-2 (Continued)

SUMMARY OF OPERABLE UNIT IRP ACTIVITIES
 FISCAL YEAR 2005 SITE MANAGEMENT PLAN, CTO -0060
 MCB, CAMP LEJEUNE, NORTH CAROLINA

Operable Unit	Site No.	Activity	Scheduled Start Up	Actual Start Up	Scheduled Completion	Actual Completion	Final Submittal/ Completion Date	ROD/IROD Signature Date
Pre-RI Sites	10	Project Plans SI NFA	FY 96 FY 98 FY 01	FY 96 FY 98 FY 01	FY 97 FY 99 FY 02	FY 98 FY 01 --	January 20, 1998 July 13, 2001 --	
	12, 68, 75, 76, 85, 87	Project Plans SI EE/CA (Site 85) Action Memorandum (Site 85) NFA Document (Site 85) NFA Document (Site 68) NA Document (Sites 12, 75, 76, 87)	FY 95 FY 95 FY 98 FY 99 FY 00 FY 98 FY 98	FY 95 FY 95 FY 98 FY 99 FY 01 FY 98 FY 98	FY 95 FY 99 FY 99 FY 99 FY 00 FY 00 FY 00	FY 95 FY 99 FY 99 FY 99 -- FY 01 FY 01	January 21, 1995 November 24, 1998 September 10, 1999 September 17, 1999 -- May 8, 2001 May 8, 2001	
--	PA Sites 902, 908, 1120, 1124, 1409, 1512, TC830, SAS113, AS116, AS119, M119, and SM173	PA Report	FY 01	FY-02	FY 02	--	--	

**Table 3-1
Fiscal Year 2005 Site Management Plan, CTO-060
Operable Unit No. 1 (Sites 24 and 78), MCB Camp Lejeune, North Carolina**

% Complete	Task Name	Start	Finish	2003				2004				2005				2006				2007				2008				2009			
				Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
100%	Pilot Study Field	2/3/03	7/16/04	████████████████████																											
100%	Post Injection Sampling #1	3/3/03	3/7/03	█																											
100%	Post Injection Sampling #2	4/14/03	4/18/03	█																											
100%	Post Injection Sampling #3	7/23/03	7/26/03		█																										
100%	Post Injection Sampling #4	1/23/04	1/27/04			█																									
100%	Post Injection Sampling #5	7/12/04	7/16/04				█																								
100%	LTM Field Investigation	7/19/04	7/28/04				█																								
100%	Annual Monitoring Report	10/18/04	11/12/04					█																							
100%	Semi-Annual Monitoring Report	12/1/04	12/17/04						█																						
100%	LTM Field Investigation	1/10/05	1/19/05							█																					
0%	Semi-Annual Monitoring Report	3/21/05	4/1/05								█																				
0%	LTM Field Investigation	7/11/05	7/20/05									█																			
0%	Annual Monitoring Report	10/17/05	11/11/05										█																		
0%	Final Site 24 LTM Close Out Report	12/1/05	12/1/05											◇	12/1																
0%	Draft Pilot Study Evaluation Report	3/7/05	4/14/05									█																			
0%	Comment Period	4/18/05	6/10/05										█																		
0%	Final Pilot Study Evaluation Report	6/13/05	7/14/05											█																	
0%	Amended PRAP (Site 78) (1)	12/1/06	12/1/06																									◇	12/1		
0%	Amended ROD (Site 78) (1)	12/1/06	12/1/06																									◇	12/1		

Project: CTO-060
Date: 2/28/05

Task  Progress  Dates to be determined 
 Tentative Schedule  Milestone 

Note: (1) Tasks Partially Funded; no schedule established

Table 3-2
 Fiscal Year 2005 Site Management Plan, CTO-060
 Operable Unit No. 2 (Sites 6 and 82), MCB Camp Lejeune, North Carolina

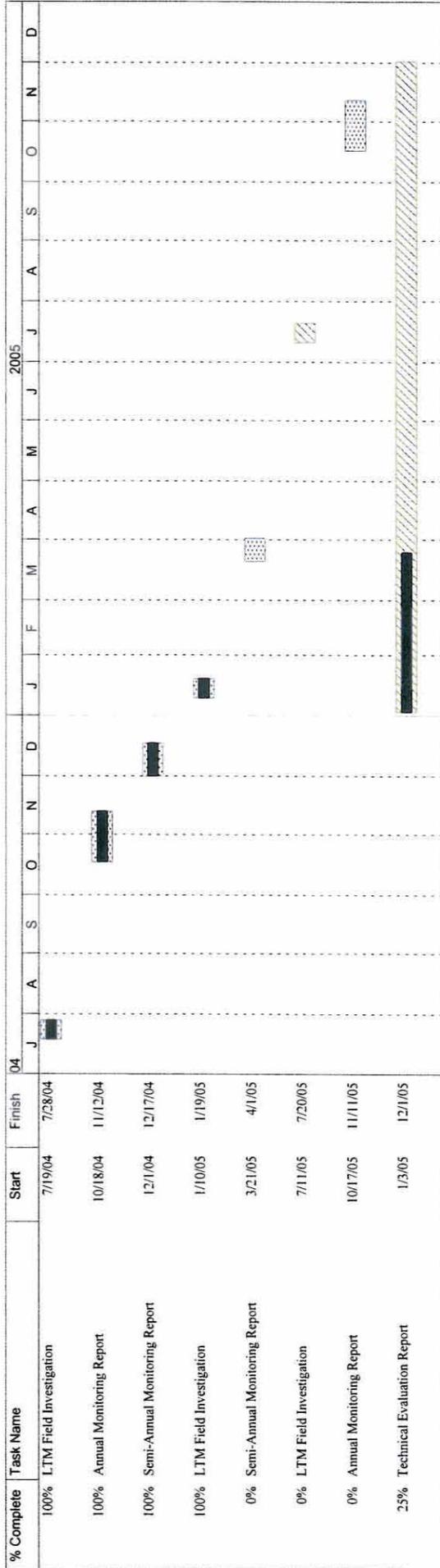


Table 3-6
 Fiscal Year 2005 Site Management Plan, CTO-060
 Operable Unit No. 10 (Site 35), MCB Camp Lejeune, North Carolina

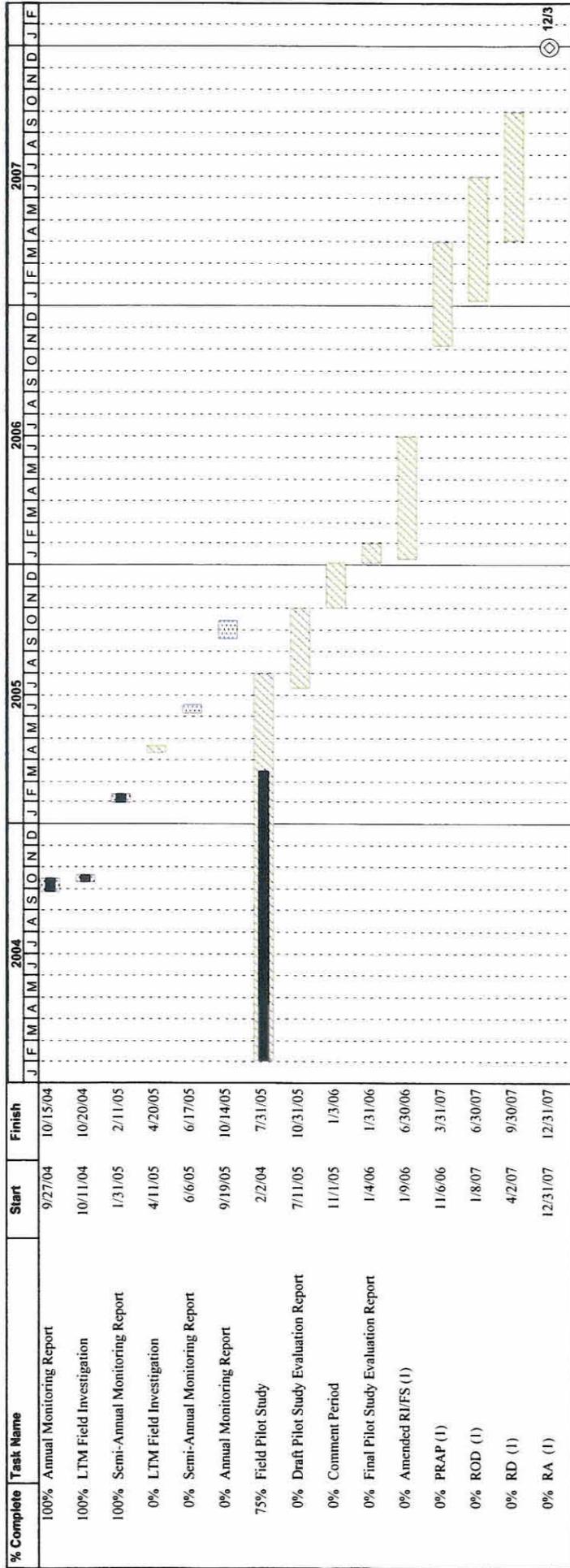
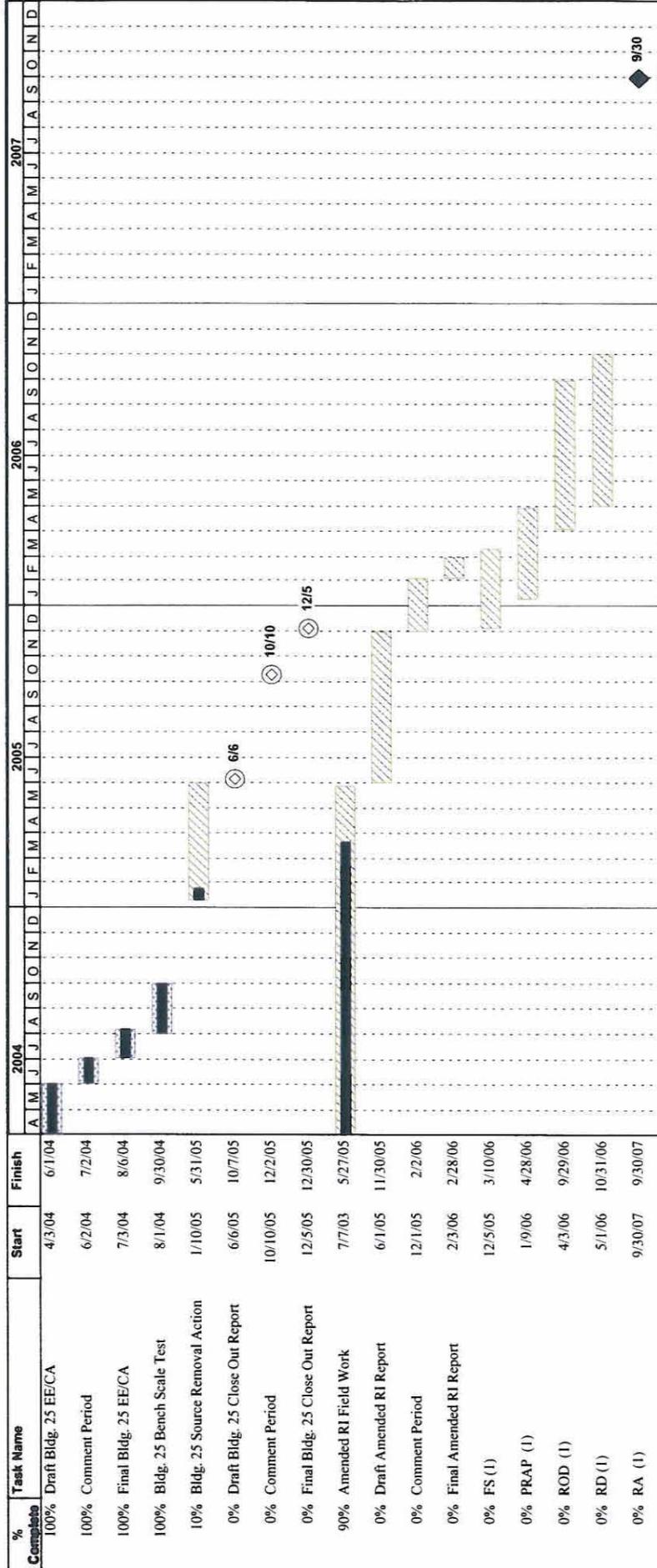


Table 3-9
 Fiscal Year 2005 Site Management Plan, CTO-060
 Operable Unit No. 15 (Site 88), MCB Camp Lejeune, North Carolina



Project: CTO-060
 Date: 2/28/05

Task
 Tentative Schedule

Milestone
 Progress

◆ RA finish date to be determined ◊

Note: (1) Tasks Unfunded

Table 3-11
 Fiscal Year 2005 Site Management Plan, CTO-060
 Operable Unit No. 18 (Site 94), MCB Camp Lejeune, North Carolina

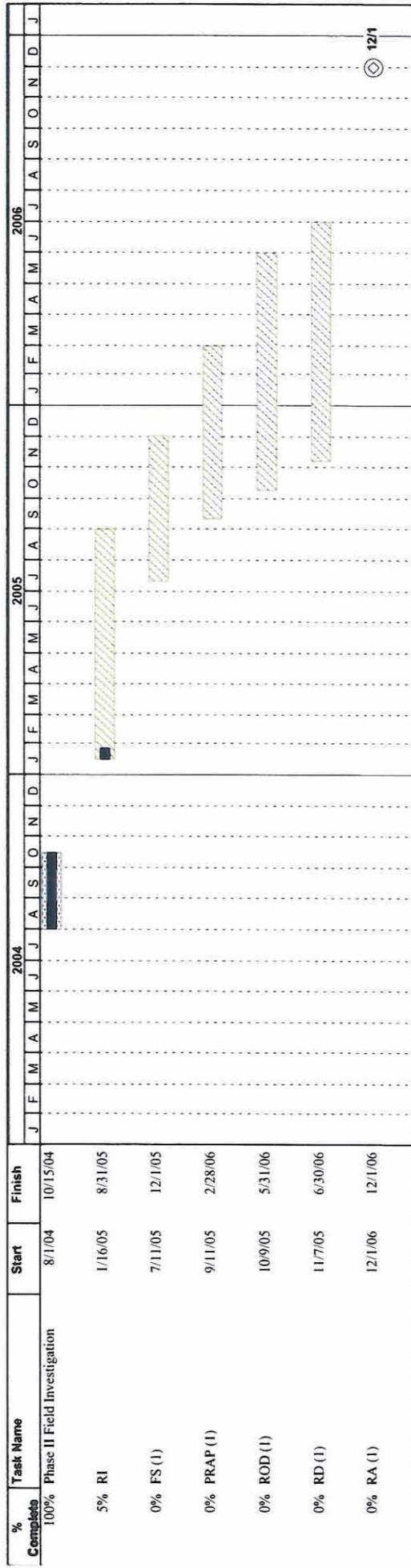
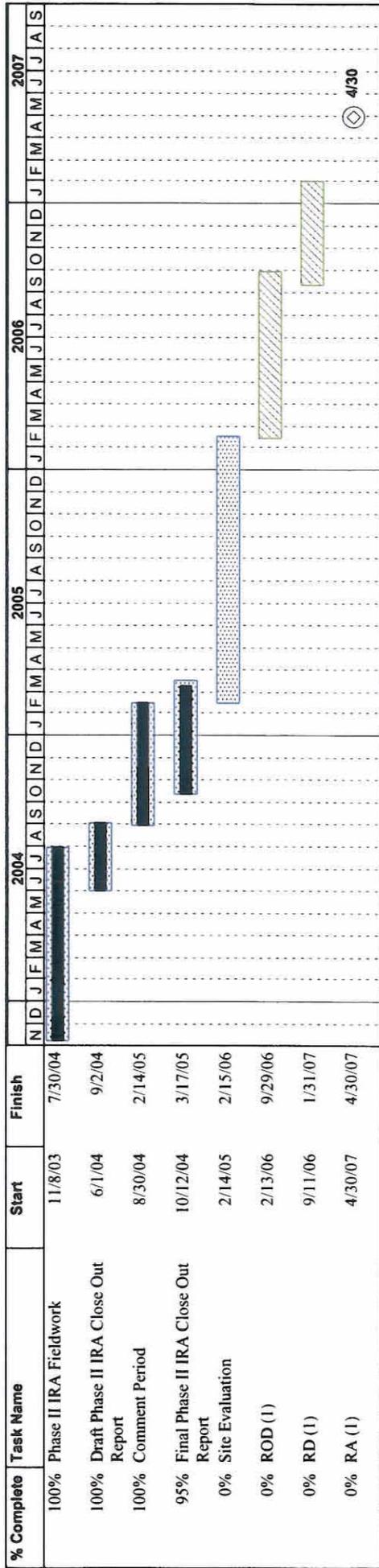


Table 3-12
Fiscal Year 2005 Site Management Plan, CTO-060
Operable Unit No. 19 (Site 84), MCB Camp Lejeune, North Carolina



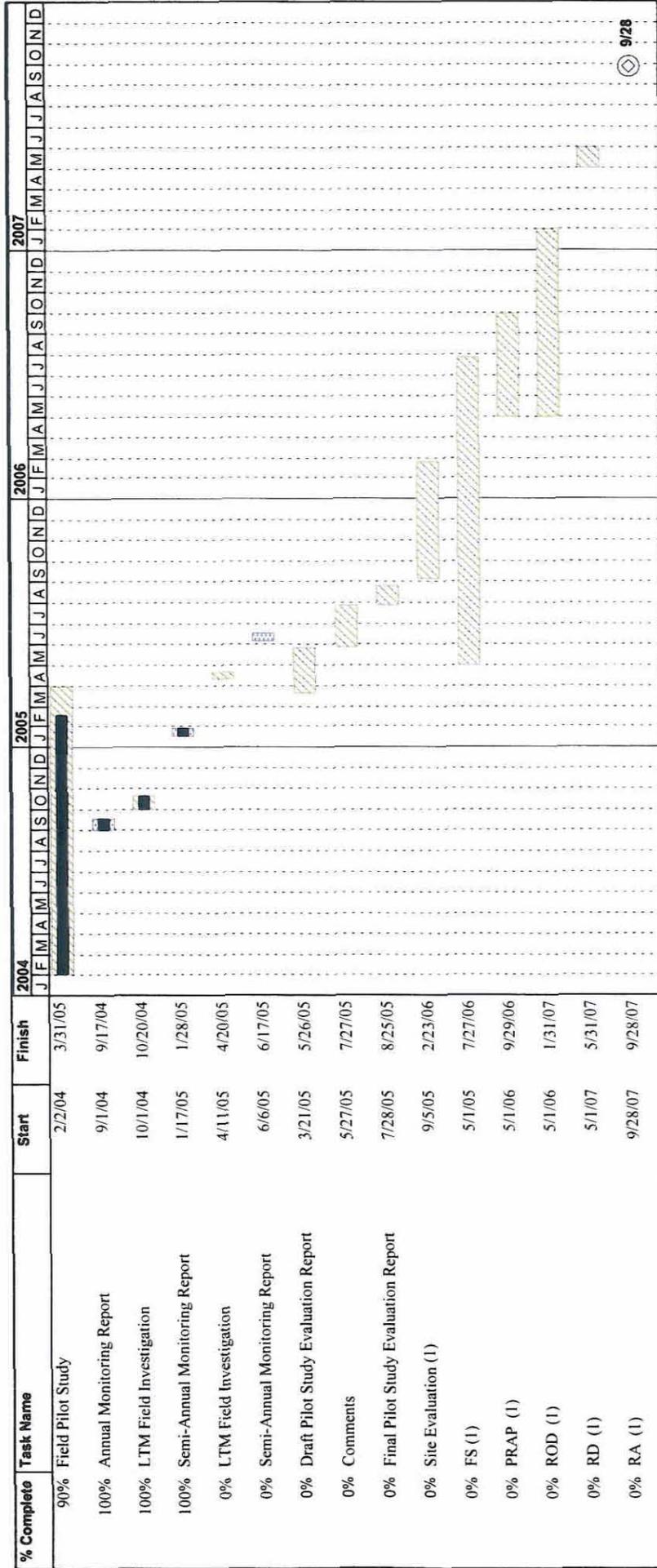
Project: CTO-060
Date: 2/28/05

Task: Milestone (diamond), Progress (solid bar), Tentative Schedule (hatched bar)

RA finish date to be determined (diamond with circle)

Note: (1) Task Unfunded

Table 3-14
 Fiscal Year 2005 Site Management Plan, CTO-060
 Operable Unit No. 21 (Site 73), MCB Camp Lejeune, North Carolina



Project: CTO-060
 Date: 2/28/05

Task
 Milestone

Progress
 RA finish date to be determined

Tentative

Notes: (1) Tasks Unfunded

TABLE 3-17
DOCUMENT SUBMITTALS BY OPERABLE UNIT FY05 -FY07
FISCAL YEAR 2005 SITE MANAGEMENT PLAN, CTO-060
MCB, CAMP LEJEUNE, NORTH CAROLINA

Operable Unit	Sites	Activity	Primary Document Submittal	Submittal Date/Anticipated Submittal Date
1	78 and 24	Remedial Action	Annual Monitoring Report (Site 78)	November 12, 2004
		Remedial Action	Semi-Annual Monitoring Report (Site 78)	December 17, 2004
		Remedial Action	Semi-Annual Monitoring Report (Site 78)	April 1, 2005
		Pilot Study	Draft OU 1 Pilot Study Evaluation Report (Site 78)	April 14, 2005
		Pilot Study	Final OU 1 Pilot Study Evaluation Report (Site 78)	July 14, 2005
		Remedial Action	Annual Monitoring Report (Site 78)	November 11, 2005
		Remedial Action	Final Site 24 LTM Close Out Report (Site 24)	December 1, 2005
		Proposed Remedial Action	Amended PRAP (Site 78)	December 1, 2006
		Record of Decision	Amended ROD (Site 78)	December 1, 2006
		Remedial Action	Annual Monitoring Report	November 12, 2004
2	6 and 82	Remedial Action	Semi-Annual Monitoring Report	December 17, 2004
		Remedial Action	Semi-Annual Monitoring Report	April 1, 2005
		Annual Monitoring Report	Annual Monitoring Report	November 11, 2005
		Technical Report	Technical Report	December 1, 2005
4	41 and 74	Remedial Action	Semi-Annual Monitoring Report (Site 41)	December 3, 2004
		Remedial Action	Semi-Annual Monitoring Report (Site 41)	March 18, 2005
		Remedial Action	Draft OU 4 Close Out Report	July 28, 2005
		Remedial Action	Annual Monitoring Report (Site 41)	August 12, 2005
		Remedial Action	Final OU 4 Close Out Report	October 31, 2005
		Remedial Action	Annual Monitoring Report	August 27, 2004
		Remedial Action	Semi-Annual Monitoring Report	January 14, 2005
		Remedial Action	Semi-Annual Monitoring Report	April 22, 2005
		Remedial Action	Annual Monitoring Report	September 2, 2005
		Post Remedial Investigation	Annual Monitoring Report (Site 36)	September 17, 2004
6	36, 43, 44 and 54	Remedial Action	Semi-Annual Monitoring Report (Site 36)	January 28, 2005
		Remedial Action	Semi-Annual Monitoring Report (Site 36)	June 17, 2005
		Record of Decision	Final ROD	June 30, 2005
		Remedial Design	Draft Remedial Design Report	July 15, 2005
		Remedial Action	Annual Monitoring Report (Site 36)	September 16, 2005
		Remedial Design	Final Remedial Design Report	September 30, 2005
		Post Remedial Investigation	Annual Monitoring Report	October 15, 2004
		Post Remedial Investigation	Semi-Annual Monitoring Report	February 11, 2005
		Post Remedial Investigation	Semi-Annual Monitoring Report	June 17, 2005
		Post Remedial Investigation	Annual Monitoring Report	October 14, 2005

TABLE 3-17 CONTINUED
DOCUMENT SUBMITTALS BY OPERABLE UNIT FY05 -FY07
FISCAL YEAR 2005 SITE MANAGEMENT PLAN, CTO-060
MCB, CAMP LEJEUNE, NORTH CAROLINA

Operable Unit	Sites	Activity	Primary Document Submittal	Submittal Date/Anticipated Submittal Date
10 (Continued)	35	Pilot Study	Draft Pilot Study Evaluation Report	October 31, 2005
		Pilot Study	Final Pilot Study Evaluation Report	January 31, 2006
		Remedial Investigation/Feasibility Study	Amended RI/FS	June 30, 2006
		Proposed Remedial Action Plan	PRAP	March 31, 2007
		Record of Decision	ROD	June 30, 2007
		Remedial Design	Remedial Design Report	September 30, 2007
12	3	Remedial Action	Semi-Annual Monitoring Report	December 3, 2004
		Remedial Action	Semi-Annual Monitoring Report	March 18, 2005
		Remedial Action	Annual Monitoring Report	August 12, 2005
14	69	Remedial Action	Annual Monitoring Report	October 15, 2004
		Remedial Action	Semi-Annual Monitoring Report	February 11, 2005
		Remedial Action	Semi-Annual Monitoring Report	July 1, 2005
		Remedial Action	Annual Monitoring Report	October 14, 2005
		Proposed Remedial Action Plan	Amended PRAP	May 31, 2006
		Record of Decision	ROD	September 29, 2006
		Remedial Design	Remedial Design Report	October 31, 2006
		15	88	Interim Removal Action
Interim Removal Action	Final Bldg. 25 EE/CA			August 6, 2004
Interim Removal Action	Draft Bldg. 25 Close Out Report			October 7, 2005
Remedial Investigation	Draft Amended RI Report			November 30, 2005
Interim Removal Action	Final Bldg. 25 Close Out Report			December 30, 2005
Remedial Investigation	Final Amended RI Report			February 28, 2006
Feasibility Study	FS			March 10, 2006
Proposed Remedial Action Plan	PRAP			April 28, 2006
Record of Decision	ROD			September 29, 2006
Remedial Design	Remedial Design Report			October 31, 2006
16	89 and 93	Post Remedial Investigation	Annual Monitoring Report	October 15, 2004
		Pilot Study	Draft ERH Pilot Study Report (Site 89)	January 27, 2005
		Amended Remedial Investigation	Draft Amended RI Report	February 24, 2005
		Post Remedial Investigation	Semi-Annual Monitoring Report	February 25, 2005
		Feasibility Study	FS (Site 93)	March 31, 2005
		Amended Remedial Investigation	Final Amended RI Report	May 31, 2005
		Pilot Study	Final ERH Pilot Study Report (Site 89)	June 30, 2005
		Post Remedial Investigation	Semi-Annual Monitoring Report	July 22, 2005
		Post Remedial Investigation	Annual Monitoring Report	October 14, 2005
		Feasibility Study	FS (Site 89)	October 31, 2005
		Proposed Remedial Action Plan	PRAP (Sites 89 and 93)	January 31, 2006
		Record of Decision	ROD (Sites 89 and 93)	September 29, 2006
		Remedial Design	Remedial Design Report	February 28, 2007

TABLE 3-17 CONTINUED
DOCUMENT SUBMITTALS BY OPERABLE UNIT FY05 -FY07
FISCAL YEAR 2005 SITE MANAGEMENT PLAN, CTO-060
MCB, CAMP LEJEUNE, NORTH CAROLINA

Operable Unit	Sites	Activity	Primary Document Submittal	Submittal Date/Anticipated Submittal Date
18	94	Remedial Investigation	RI Report	August 31, 2005
		Feasibility Study	FS Report	December 1, 2005
		Proposed Remedial Action Plan	PRAP	February 28, 2006
		Record of Decision	ROD	May 31, 2006
		Remedial Design	Remedial Design Report	June 30, 2006
19	84	Interim Removal Action	Draft Phase II IRA Close Out Report	September 2, 2004
		Interim Removal Action	Final Phase II IRA Close Out Report	March 17, 2005
		Record of Decision	ROD	September 29, 2006
		Remedial Design	Remedial Design Report	January 31, 2007
		Pilot Study	Draft Pilot Study Work Plan	June 2, 2004
20	86	Post Remedial Investigation	Annual Monitoring Report	May 20, 2005
		Pilot Study	Final Pilot Study Work Plan	December 1, 2005
		Pilot Study	Draft Pilot Study Evaluation Report	December 1, 2005
		Pilot Study	Final Pilot Study Evaluation Report	February 16, 2006
		Feasibility Study	Amended FS Report	June 22, 2006
		Proposed Remedial Action Plan	Final PRAP	September 29, 2006
		Record of Decision	Final ROD	October 31, 2006
		Remedial Design	Final Remedial Design Report	January 31, 2007
		Post Remedial Investigation	Annual Monitoring Report	September 17, 2004
		Post Remedial Investigation	Semi-Annual Monitoring Report	January 28, 2005
21	73	Pilot Study	Draft Pilot Study Evaluation Report	May 26, 2005
		Post Remedial Investigation	Semi-Annual Monitoring Report	June 17, 2005
		Pilot Study	Final Pilot Study Evaluation Report	August 25, 2005
		Feasibility Study	FS Report	July 27, 2006
		Proposed Remedial Action Plan	PRAP	September 29, 2006
		Record of Decision	ROD	January 31, 2007
		Remedial Design	Remedial Design Report	May 31, 2007
		No Further Action Document	Final NFA Report (Site 85)	May 10, 2005
		No Further Action Document	Final NFA Report (Site 10)	November 15, 2005
		Pre-RI Sites	10, 12, 68, 75, 908, 1120, 1124, 76, 85, and 87	
PA Sites	Buildings 902, 1409, 1512, SAS113, AS116, AS119, TC830, M119, M315 and SM173	Preliminary Assessment	Draft PA Report	May 3, 2002
		Preliminary Assessment	Final PA Report	March 31, 2005

TABLE 3-18
DOCUMENT SUBMITTALS BY MONTH FY05-FY07
FISCAL YEAR 2005 SITE MANAGEMENT PLAN, CTO-060
MCB, CAMP LEJEUNE, NORTH CAROLINA

Anticipated Submittal Date	Operable Unit	Sites	Primary Document Submittal
May 3, 2002	PA Sites	Buildings 902, 908, 1120, 1124, 1409, 1512, SAS113, AS116, AS119, TC830, M119, M315 and SM173	Draft PA Report
October 16, 2003	21	73	Annual Monitoring Report
June 1, 2004	15	88	Draft Bldg. 25 EE/CA
June 2, 2004	20	86	Draft Pilot Study Work Plan
August 6, 2004	15	88	Final Bldg. 25 EE/CA
August 27, 2004	5	2	Annual Monitoring Report
September 2, 2004	19	84	Draft Phase II IRA Close Out Report
September 17, 2004	6	36, 43, 44 and 54	Annual Monitoring Report (Site 36)
September 17, 2004	21	73	Annual Monitoring Report
October 15, 2004	10	35	Annual Monitoring Report
October 15, 2004	14	69	Annual Monitoring Report
October 15, 2004	16	89 and 93	Annual Monitoring Report
November 12, 2004	1	78 and 24	Annual Monitoring Report (Site 78)
November 12, 2004	2	6 and 82	Annual Monitoring Report
December 3, 2004	4	41 and 74	Semi-Annual Monitoring Report (Site 41)
December 3, 2004	12	3	Semi-Annual Monitoring Report
December 17, 2004	1	78 and 24	Semi-Annual Monitoring Report (Site 78)
December 17, 2004	2	6 and 82	Semi-Annual Monitoring Report
January 14, 2005	5	2	Semi-Annual Monitoring Report
January 27, 2005	16	89 and 93	Draft ERH Pilot Study Report (Site 89)
January 28, 2005	6	36, 43, 44 and 54	Semi-Annual Monitoring Report (Site 36)
January 28, 2005	21	73	Semi-Annual Monitoring Report
February 11, 2005	10	35	Semi-Annual Monitoring Report
February 11, 2005	14	69	Semi-Annual Monitoring Report
February 24, 2005	16	89 and 93	Draft Amended RI Report
February 25, 2005	16	89 and 93	Semi-Annual Monitoring Report

TABLE 3-18 (Continued)
DOCUMENT SUBMITTALS BY MONTH FY05-FY07
FISCAL YEAR 2005 SITE MANAGEMENT PLAN, CTO-060
MCB, CAMP LEJEUNE, NORTH CAROLINA

Anticipated Submittal Date	Operable Unit	Sites	Primary Document Submittal
March 17, 2005	19	84	Final Phase II IRA Close Out Report
March 18, 2005	4	41 and 74	Semi-Annual Monitoring Report (Site 41)
March 18, 2005	12	3	Semi-Annual Monitoring Report
March 31, 2005	16	89 and 93	FS (Site 93)
March 31, 2005	PA Sites	Buildings 902, 908, 1120, 1124, 1409, 1512, SAS113, AS116, AS119, TC830, M119, M315 and SM173	Final PA Report
April 1, 2005	1	78 and 24	Semi-Annual Monitoring Report (Site 78)
April 1, 2005	2	6 and 82	Semi-Annual Monitoring Report
April 14, 2005	1	78 and 24	Draft OU 1 Pilot Study Evaluation Report (Site 78)
April 22, 2005	5	2	Semi-Annual Monitoring Report
May 10, 2005	Pre-RI Sites	10, 12, 68, 75, 76, 85, and 87	Final NFA Report (Site 85)
May 20, 2005	20	86	Annual Monitoring Report
May 26, 2005	21	73	Draft Pilot Study Evaluation Report
May 31, 2005	16	89 and 93	Final Amended RI Report
June 17, 2005	6	36, 43, 44 and 54	Semi-Annual Monitoring Report (Site 36)
June 17, 2005	10	35	Semi-Annual Monitoring Report
June 17, 2005	21	73	Semi-Annual Monitoring Report
June 30, 2005	6	36, 43, 44 and 54	Final ROD
June 30, 2005	16	89 and 93	Final ERH Pilot Study Report (Site 89)
July 1, 2005	14	69	Semi-Annual Monitoring Report
July 14, 2005	1	78 and 24	Final OU 1 Pilot Study Evaluation Report (Site 78)
July 15, 2005	6	36, 43, 44 and 54	Draft Remedial Design Report
July 22, 2005	16	89 and 93	Semi-Annual Monitoring Report
July 28, 2005	4	41 and 74	Draft OU 4 Close Out Report
August 12, 2005	4	41 and 74	Annual Monitoring Report (Site 41)
August 12, 2005	12	3	Annual Monitoring Report
August 25, 2005	21	73	Final Pilot Study Evaluation Report
August 31, 2005	18	94	RI Report
September 2, 2005	5	2	Annual Monitoring Report
September 16, 2005	6	36, 43, 44 and 54	Annual Monitoring Report (Site 36)
September 30, 2005	6	36, 43, 44 and 54	Final Remedial Design Report

TABLE 3-18 (Continued)
DOCUMENT SUBMITTALS BY MONTH FY05-FY07
FISCAL YEAR 2005 SITE MANAGEMENT PLAN, CTO-060
MCB, CAMP LEJEUNE, NORTH CAROLINA

Anticipated Submittal Date	Operable Unit	Sites	Primary Document Submittal
October 7, 2005	15	88	Draft Bldg. 25 Close Out Report
October 14, 2005	10	35	Annual Monitoring Report
October 14, 2005	14	69	Annual Monitoring Report
October 14, 2005	16	89 and 93	Annual Monitoring Report
October 31, 2005	4	41 and 74	Final OU 4 Close Out Report
October 31, 2005	10	35	Draft Pilot Study Evaluation Report
October 31, 2005	16	89 and 93	FS (Site 89)
November 11, 2005	1	78 and 24	Annual Monitoring Report (Site 78)
November 11, 2005	2	6 and 82	Annual Monitoring Report
November 15, 2005	Pre-RI Sites	10, 12, 68, 75, 76, 85, and 87	Final NFA Report (Site 10)
November 30, 2005	15	88	Draft Amended RI Report
December 1, 2005	1	78 and 24	Final Site 24 LTM Close Out Report (Site 24)
December 1, 2005	2	6 and 82	Technical Report
December 1, 2005	18	94	FS Report
December 1, 2005	20	86	Final Pilot Study Work Plan
December 1, 2005	20	86	Draft Pilot Study Evaluation Report
December 30, 2005	15	88	Final Bldg. 25 Close Out Report
January 31, 2006	10	35	Final Pilot Study Evaluation Report
January 31, 2006	16	89 and 93	PRAP (Sites 89 and 93)
February 16, 2006	20	86	Final Pilot Study Evaluation Report
February 28, 2006	15	88	Final Amended RI Report
February 28, 2006	18	94	PRAP
March 10, 2006	15	88	FS
April 28, 2006	15	88	PRAP
May 31, 2006	14	69	Amended PRAP
May 31, 2006	18	94	ROD
June 22, 2006	20	86	Amended FS Report
June 30, 2006	10	35	Amended RI/FS
June 30, 2006	18	94	Remedial Design Report
July 27, 2006	21	73	FS Report

TABLE 3-18 (Continued)
DOCUMENT SUBMITTALS BY MONTH FY05-FY07
FISCAL YEAR 2005 SITE MANAGEMENT PLAN, CTO-060
MCB, CAMP LEJEUNE, NORTH CAROLINA

Anticipated Submittal Date	Operable Unit	Sites	Primary Document Submittal
September 29, 2006	14	69	ROD
September 29, 2006	15	88	ROD
September 29, 2006	16	89 and 93	ROD (Sites 89 and 93)
September 29, 2006	19	84	ROD
September 29, 2006	20	86	Final PRAP
September 29, 2006	21	73	PRAP
October 31, 2006	14	69	Remedial Design Report
October 31, 2006	15	88	Remedial Design Report
October 31, 2006	20	86	Final ROD
December 1, 2006	1	78 and 24	Amended PRAP (Site 78)
December 1, 2006	1	78 and 24	Amended ROD (Site 78)
January 31, 2007	19	84	Remedial Design Report
January 31, 2007	20	86	Final Remedial Design Report
January 31, 2007	21	73	ROD
February 28, 2007	16	89 and 93	Remedial Design Report
March 31, 2007	10	35	PRAP
May 31, 2007	21	73	Remedial Design Report
June 30, 2007	10	35	ROD
September 30, 2007	10	35	Remedial Design Report

FIGURES

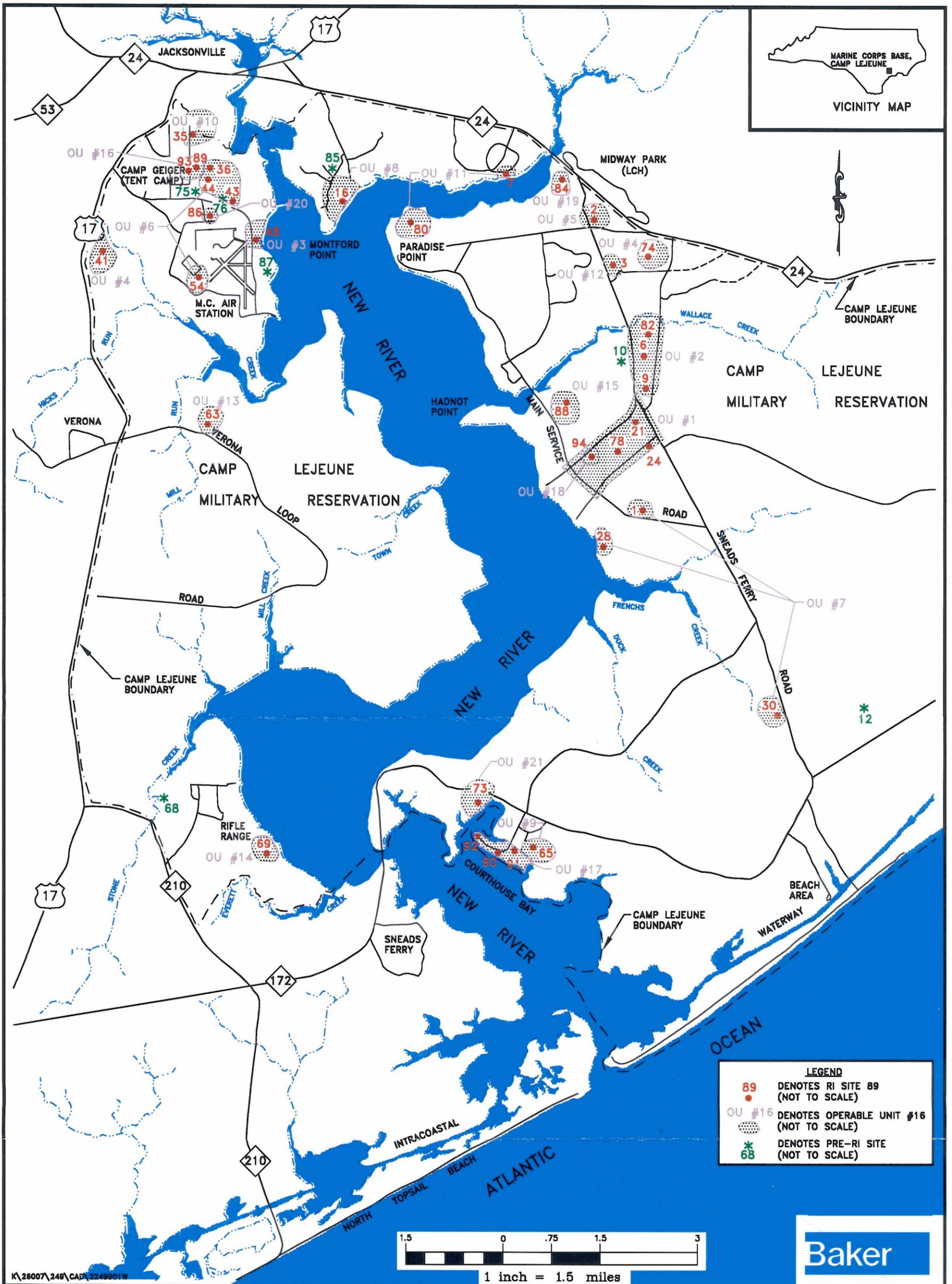


FIGURE 1-1
 INSTALLATION RESTORATION PROGRAM SITES
 FY 2005 SITE MANAGEMENT PLAN
 CTO - 0060

MARINE CORPS BASE, CAMP LEJEUNE
 NORTH CAROLINA